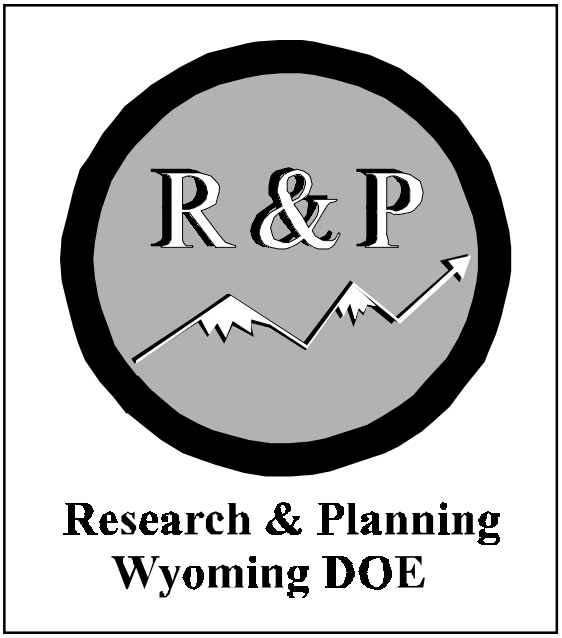
OUTLOOK 2000:
DETAILED OCCUPATIONAL PROJECTIONS AND LABOR SUPPLY

October 2000



Outlook 2000:
Detailed Occupational Projections and Labor Supply

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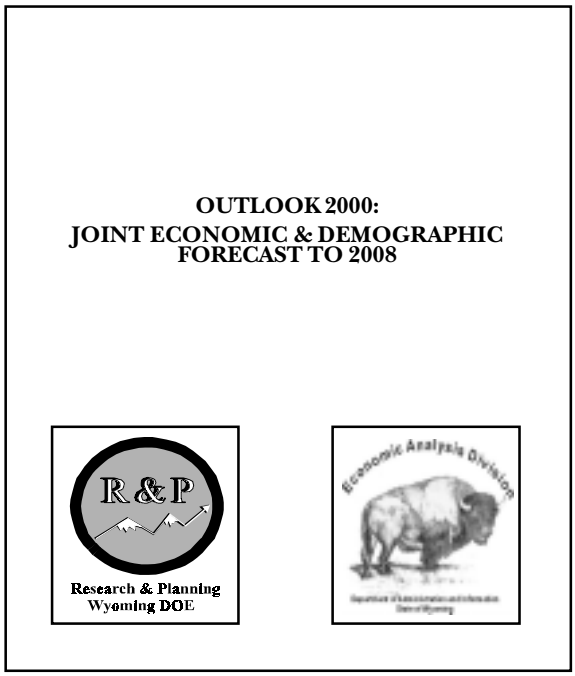
Introduction

Purpose:

This publication seeks to identify Wyoming's future needs and sources for labor by investigating occupational employment and the available information on Wyoming's workforce. Our analysis builds on and lends detail to our prior publication, *Outlook 2000: Joint Economic & Demographic Forecast to 2008*, which had as its primary focus Wyoming's economic forecast measured in terms of the industrial demand for labor. With this study, we intend to describe how the industrial projections for 1998-2008 contained in that joint forecast (see Figure I-1 and Table I-1, reprinted from previous publication) can be associated with specific changes in occupational demand.



We focus on the interplay between underlying demographic and economic changes. Just as projections for industrial growth do not mean growth for all firms within an industry, neither can occupational growth projections forecast successful employment outcomes for individuals with specific occupational skills. The attractiveness of a teaching, nursing, food preparation, or computer programming job to any two individuals will vary based on a wide range of factors. Is a job more or less attractive when it is in a location where individuals with specific occupational skills are in low or chronically low supply? Such an environment may provide an opportunity to showcase skills and gain experience. Alternatively, it may provide a more a stressful environment, offering fewer local opportunities to learn from other professionals or advance into new career tracks. We cannot answer

Figure I-1: Total Nonagricultural Wage & Salary Employment

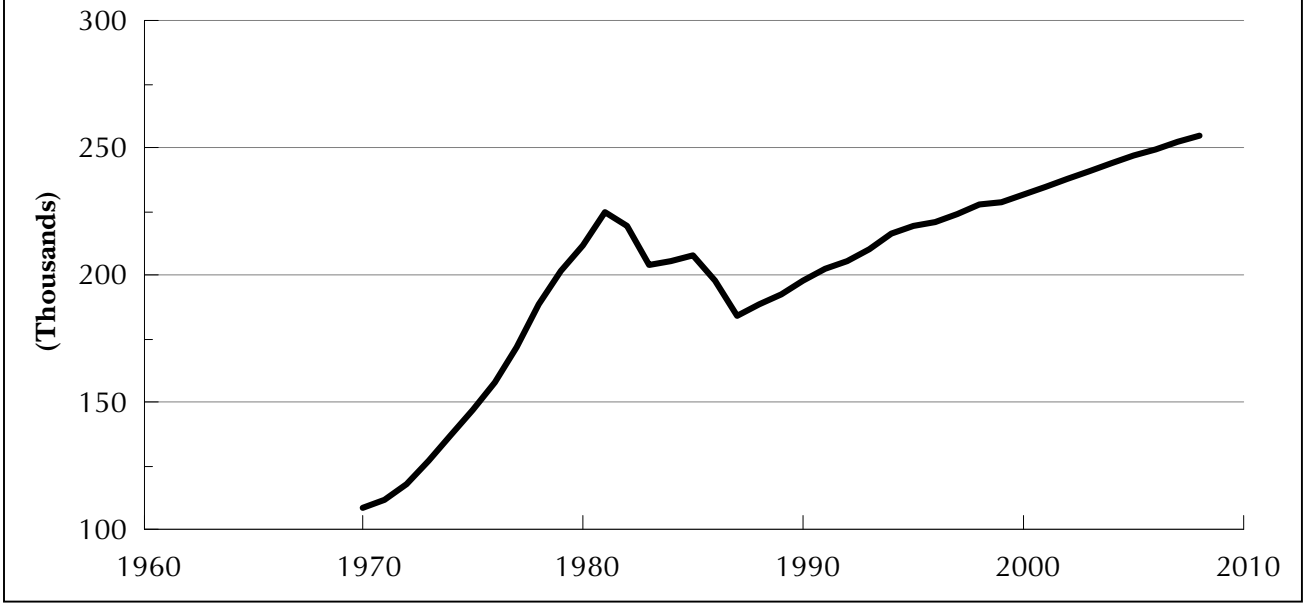


Table I-1: Total Nonagricultural Wage & Salary Employment, 1995 - 2008

(in Thousands)	Historical: 1995	1996	1997	Forecast: 1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Nonagricultural Wage & Salary Employment	219.4	221.1	224.4	227.9	229.1	232.3	235.0	237.8	240.9	244.0	247.1	249.8	252.7	255.3
Percent Change		0.8%	1.5%	1.5%	0.5%	1.4%	1.1%	1.2%	1.3%	1.3%	1.2%	1.1%	1.1%	1.0%
Mining	17.0	15.9	16.8	17.0	15.6	15.5	15.5	15.5	15.5	15.5	15.7	15.6	15.6	15.6
Percent Change		-6.8%	5.4%	1.1%	-9.2%	-0.5%	0.0%	0.1%	0.0%	0.1%	0.7%	-0.1%	-0.2%	-0.1%
Construction	14.2	14.2	15.1	15.8	16.8	17.7	17.9	18.0	18.3	18.5	18.6	18.8	19.0	19.1
Percent Change		-0.2%	6.0%	4.8%	5.7%	5.1%	0.8%	0.9%	1.5%	1.1%	0.6%	0.8%	1.1%	0.9%
Manufacturing	9.7	10.8	10.8	10.9	10.9	11.0	11.1	11.3	11.4	11.6	11.7	11.8	11.9	12.0
Percent Change		9.5%	0.2%	1.0%	0.5%	0.6%	1.4%	1.2%	1.3%	1.5%	1.2%	0.9%	0.6%	0.5%
Transportation, Communications,	13.7	13.9	13.9	13.9	14.0	14.1	14.0	14.0	13.9	13.9	14.0	13.8	13.8	13.8
& Public Utilities (TCPU) Percent Change		1.8%	-0.2%	0.1%	0.8%	0.6%	-0.6%	0.0%	-0.6%	0.0%	0.3%	-1.3%	-0.0%	0.0%
Wholesale Trade	7.4	7.4	7.7	7.8	7.8	8.0	8.1	8.3	8.5	8.7	8.9	9.0	9.1	9.3
Percent Change		0.1%	4.2%	1.0%	0.6%	2.2%	1.6%	2.3%	2.5%	2.0%	1.8%	1.5%	1.5%	1.4%
Retail Trade	44.2	44.8	44.8	44.9	45.1	45.7	46.5	47.3	48.2	49.0	49.8	50.5	51.2	52.0
Percent Change		1.3%	0.1%	0.2%	0.5%	1.2%	1.6%	1.9%	1.7%	1.7%	1.5%	1.4%	1.4%	1.4%
Finance, Insurance & Real Estate (FIRE)	7.9	7.9	8.2	8.6	8.7	8.7	8.7	8.7	8.8	8.9	9.0	9.0	9.1	9.1
Percent Change		0.2%	2.9%	5.0%	1.3%	-0.5%	0.4%	0.2%	0.8%	1.0%	0.8%	0.8%	0.6%	0.5%
Services	47.5	48.1	49.1	50.5	52.0	53.2	54.5	55.8	57.1	58.6	60.1	61.5	63.0	64.4
Percent Change		1.3%	1.9%	2.9%	2.9%	2.2%	2.3%	2.4%	2.4%	2.5%	2.4%	2.4%	2.3%	2.2%
Total Government	57.8	58.1	58.1	58.4	58.1	58.4	58.7	58.8	59.0	59.2	59.4	59.7	59.9	60.1
Percent Change		0.6%	-0.1%	0.6%	-0.6%	0.6%	0.5%	0.1%	0.5%	0.3%	0.4%	0.5%	0.4%	0.2%
Federal Government	7.5	7.3	7.1	7.1	7.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Percent Change		-3.0%	-3.0%	0.6%	-0.7%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
State & Local Government	50.3	50.9	51.0	51.3	50.9	51.1	51.4	51.5	51.7	51.9	52.1	52.4	52.6	52.7
Percent Change		1.1%	0.3%	0.6%	-0.7%	0.3%	0.6%	0.1%	0.5%	0.3%	0.4%	0.6%	0.4%	0.2%
State Government	13.6	13.5	13.6	13.6	13.5	13.5	13.5	13.5	13.4	13.4	13.4	13.4	13.4	13.5
Percent Change		-1.0%	0.9%	0.1%	-0.5%	-0.3%	-0.1%	-0.1%	-0.1%	-0.1%	-0.0%	0.0%	0.1%	0.1%
Local Government	36.7	37.4	37.4	37.7	37.4	37.6	37.9	38.0	38.3	38.5	38.7	39.0	39.2	39.3
Percent Change		2.0%	0.1%	0.7%	-0.8%	0.5%	0.8%	0.2%	0.8%	0.5%	0.6%	0.8%	0.5%	0.3%

that question definitively; only individuals can. However, we can examine the dynamic environment created by demographic change, migration, changing demand for technological skills, and wage competition. These factors and others provide a contextual framework for understanding and predicting employee behavior in the aggregate. Reaching below surface explanations, attempting to characterize and understand this dynamic also better equips economic decision makers, career counselors, educators, employers, and employees to plan how they will interact with Wyoming's future labor market.

Findings:

Growth and Job Vacancies, 1998-2008

- The number of non-agricultural wage and salary jobs is forecast to grow over the period 1998 to 2008 by half the rate that it did the prior ten years. A growth rate of 12.0 percent should result in 27,400 additional jobs (to 255,300 - see Table I-1). Another 26,868 persons, or 9.1 percent of the workforce, are expected to reach retirement age over the forecast period. Turnover, as a source of job openings, will increase as Wyoming's labor market continues its shift towards the Services Producing sector. And faster national growth, especially for occupations requiring education, will intensify the competition for Wyoming's labor.

The Workforce

- In effect, over the course of the projection period (1998-2008) a large share of Wyoming's workforce will mature into the age category (45-54) of greatest wage and salary earnings.

- Most young workers (those in the <16, 16-19, and 20-24 age groups) found primary employment in 1998 in Retail Trade (18,642) and Services (11,134), with a fair number in Construction (4,302).

These industries, therefore, are more dependent than most on a steady supply of young workers.

- Mining, Manufacturing, Transportation, Communications, & Public Utilities (TCPU), WholesaleTrade, and Government all employ a substantial percentage of workers between the ages of 45 and 54. These workers will reach the traditional retirement age, or may have an option to retire early, in the next 10-15 years.

Worker Utilization

- By improving the utilization rate of human resources in Services, Retail Trade, Construction or other growing industries to a level, say, equivalent to TCPU (81.8%), Wyoming's current supply of labor may be able to meet the demand for labor and more fully tap workers' potential.

- The earnings gap is much greater in Services where women, at the peak of their earnings age bracket, earn only 44.2 percent ($16,099) of male earnings ($36,389). In Retail Trade, females earn only 44.6 percent of their male counterparts.

- In 1998, 43.7 percent of the workforce worked for the same employer and an additional 3.8 percent had consistent work opportunities (not necessarily in the same industry) but changed employers. Though there are individual exceptions in the other categories, the majority of workers had a more tenuous relationship with the market.

The Workplace

- As the education required to work in a specific occupation increases, the opportunities for private sector employment in Wyoming decrease relative to the five destination states to which Wyoming's population is most likely to migrate and the U.S.

- Most of the emerging occupations in the U.S. (21 of 30) with the greatest percent growth over the next decade will require at least post secondary education. However, only 12 of Wyoming's 30 emerging occupations will require experience beyond on-the-job training.

- The majority of net growth occupations in Wyoming assign comparatively low importance to technical skills.

- With the population, containing the supply of labor, estimated to have decreased between 1998 and 1999 (down from 480,045 to 479,602), continued growth in Services is likely to be constrained unless it utilizes human capital more efficiently.

Workforce Development System

- Given the lower levels of utilization, worker attachment, worker earnings, and higher turnover rates for the Services Producing sector, it is not clear that the workforce benefits extensively from non-selective One-Stop services driven by the volume of transactions generated by Services.

- To the extent that employee replacement need is industry wide, it is not clear how firms losing employees to retirement will be able to recruit from a less mature workforce in the same industry.

- One of the challenges faced by junior colleges or technical schools, in particular, is to determine a response to the steady demand for either lower-skilled workers or educated workers who will accept low paying jobs.

Introduction:

Wyoming's ability to attract, train, and retain labor occurs in a competitive regional and national market. To understand how Wyoming employers compete for skilled labor, we first need to identify Wyoming's workforce. Chapter 1 briefly examines employment change by industry, identifying where Wyoming workers currently work, and describes each major industry's workforce in terms of gender, age, and earnings. Chapter 2 identifies how employers and workers interact with each other. The analysis examines how industries utilize their human resources and the levels of attachment categories of workers have for the industries in which they work. In examining the relationship between utilization and labor attachment, Chapter 2 also examines demographic differences among workers and two types of employee exits from the labor market – retirement and employee turnover. Chapter 3 describes changes in the structure of occupational demand in Wyoming, how these changes relate to worker exits that occur in the labor market, and how the occupational changes expected to occur in Wyoming compare to regional and national trends. Chapter 4 provides a limited view of some of the job skills associated with the fastest growing occupations in Wyoming. Chapter 5 provides a wage analysis of the occupational projections in Chapter 3. This chapter also examines the correlation between experience/ educational levels and wage differences between Wyoming, the nation, and the states to which the Wyoming population is most likely to migrate (destination states). Finally, in Chapter 6, our analysis concludes with an application of national industrial staffing patterns and employment data to compare the competitive opportunities for private-sector and public-sector employment in Wyoming, the nation, and five destination states.

In ***Outlook 2000: Joint Economic & Demographic Forecast to 2008***, the principal unit of analysis is jobs by industry. By industry, we mean firms grouped in terms of goods or services produced. In contrast, the focus of our measures in this publication frequently changes. Within each chapter, we share data and investigate issues related to change in the occupational level by shifting among several units of analysis: industries, firms, jobs, individuals, occupations, and the interaction between them. This broader approach enables us, for example, to describe the behavior of industry trends in terms of the number of jobs (the employer's perspective) and the number of individuals affected (the employee's perspective).

Because an understanding of these units of analysis is important to all aspects of this report, they deserve to be reviewed here. A 'unit of analysis' is the basic operational definition used in the collection and organization of information.

Industries refer to the activities in which establishments (firms) are primarily engaged and by which they can be grouped and categorized. The Standard Industrial Classification (SIC) coding system[1] is used to assign firms within one of 10 major industries, divided between two industrial sectors, Goods Producing and Services Producing. The Goods Producing sector includes four major industries: Agriculture, Mining, Construction, and Manufacturing. The Services Producing sector includes the six remaining major industries: Transportation, Communications, & Public Utilities (TCPU); Wholesale Trade; Retail Trade; Finance, Insurance, & Real Estate (FIRE); Services; and Government. Each of the 10 major industries can be divided further into subcategories. The SIC assigns each industry up to a four-digit code. For example:

SIC 1. Mining
SIC 10. Metal Mining
SIC 101. Iron Ores
SIC 102. Copper Ores
SIC 109. Miscellaneous Metal Ores
SIC 1094. Uranium-Radium-Vanadium Ores
SIC 1099. Miscellaneous Metal Ores, Not Elsewhere Classified
SIC 12. Coal Mining

Firms refer to the establishments, publicly and privately owned, that employ workers. The firm may employ workers at a single location (e.g., a locally owned and operated cafe) or among several locations (i.e., chain department stores or state agencies often employ people in locations statewide).

Jobs refer to the number of opportunities for work available, as reported by firms. Jobs can be either 'occupied' or 'vacant,' and they can be characterized further in terms of occupation and associated skills. A count of jobs is not a count of people, because people can hold more than one job with different employers and in different industries. The ES-202 Employer Database maintained by the Wyoming Department of Employment is a compilation of employer reported data collected from the Unemployment Insurance (UI) program and supplemented by statistical surveys. The data include employer characteristics such as employer unit, the number of jobs (but not the number of occupants of those jobs), and total wages. The data are reported quarterly by each firm required to pay Unemployment Insurance taxes. A summary of the data is published annually.[2]

Individuals refer to the number of people participating in the labor market, without regard to the number of sequential or concurrent jobs they hold during a given time period. The Wage Records Database (a companion of the ES-202 employer database) identifies by Social Security Number (SSN) each individual employed by a firm and that individual's quarterly wages. When SSNs are matched to demographic data (e.g., age, gender) contained in other administrative databases (e.g., Driver's License, Employment Services) and firm data contained in the ES-202, we can characterize the distribution of Wyoming employees among industries.

To be technically correct and to avoid confusion in our discussion of labor supply, ***occupations*** will not be treated as distinct units of analysis. Rather, the term will be used in this publication to *describe* two other units of analysis mentioned above: the characteristics of a job (e.g., the position of computer programmer) and the educational and skill level attained by an individual (e.g., the computer programmer herself). The term occupation is defined by the context of its use.

Transactions as units of analysis can be divided into two categories: market and non-market activities over time.

a) Market transactions include the exchange of labor for compensation, hiring and exits from and to employment, and the duration and type of worker incumbency.

b) In addition to employer-worker transactions, there are worker and employer transactions with market support institutions such as Unemployment Insurance, training entities, and workforce development agencies (e.g., agencies which, when taken in their sum, are more popularly known as the Workforce Development System).

Because shifting among units of analysis sometimes creates confusion for those unfamiliar with the vocabulary of labor economics, we have incorporated page tabs in this publication to help readers identify the location of data and discussions related to the specific units of analysis. The report also includes a glossary.

Chapter 1
Wyoming Workforce and Industry

> *"The basic data that we should look at includes the number of available workers by: ... age, skills, training, mobility, education levels, wage requirements, locations in State, and management experience..."* Wyoming Workforce Development Council Minutes, June 6, 2000

The subjects of this chapter are labor market demand, supply, and the dynamic commerce between them. Developing an understanding of the detailed interactions between industries, firms, jobs, and individuals requires an identification of where the current workforce works. And because worker needs, expectations, and experience are associated with age and gender, we also need to describe the demographic characteristics of the workforce. We begin with the recent behavior of industries and firms.

Where Are the Jobs?

Net job growth refers to changes in the level of employment. As we can see in Table 1-1 (see page 18) over the period 1996 to 1998, for all firms having employment in all three years (1995 to ensure that the firm is established, and subsequently in 1996 through 1998), the net number of jobs increased by 2.4 percent. However, not all firms experienced growth over that same period; what is true of the population of firms is not true about each firm. The answer to the question of job growth is that it is a function of industrial sector and other firm characteristics (e.g., the age, location, and size of the firm).[3] Before we can investigate the breadth and depth of the detailed interactions between industries, firms, jobs, and individuals, we need to identify where the current workforce works. We also need to define in general terms some of the demographic characteristics of the workforce.

Table 1-1 shows firm and employment growth by industry for the period 1996 to 1998. For all industries, employment grew from 198,405 to 203,162 jobs, or 2.4 percent. Three of the ten major industries, Mining, Construction, and Finance, Insurance, & Real Estate (FIRE) showed significant growth in total employment for this period (11.5%, 9.3%, and 7.1%, respectively). However, even though industries may grow, not all firms[4] in those growth industries exhibit the same behavior.

Within Mining, for example, Table 1-1 shows that 27.4 percent of 507 Mining firms accounted for the highest rates of employment growth in that industry (growth exceeding 25.5%), with 22.5 percent of these firms reducing their employment by 18.8 percent or more. Metal mining firms were responsible for 47.1 percent of the highest growth category within the Mining industry. The overall picture that emerges is one where roughly half of all Mining firms grew and the other half declined in employment, providing a very dynamic labor market.

A similar pattern emerges for the Construction industry in which 30.5 percent of 1,681 firms experienced the highest rate (25.5%) of employment growth. On the other hand, a significant 24.2 percent experienced serious declines in employment (18.8% or more). Only 14.2 percent of firms in Construction remained fairly stable over the three-year period (-0.8% to 3.9%). The occupations and skills associated with Mining and Construction jobs, especially heavy construction, are often similar. Where employment skills are transferable between industries and firms, we would expect to see these similar patterns in employment growth.

Simultaneous decline and growth among firms in the same industry, or firms which are likely to have

common occupational and skills needs implies a great deal of churning in the movement of labor between firms.

FIRE and Wholesale Trade, both which experienced more modest growth in total employment between 1996-1998, display a different pattern of growth than Mining and Construction. If it were charted, employment growth for these industries would be represented by a bell curve. The largest percent of

Table 1-1: Firm Growth and Employment Change by Industry, 1996 - 1998

Primary Industry*	Industry	Total Firms**	Percent Change Category: 25.5% & Up	4% to 25.4%	-.8% to 3.9%	-18.7% to -.9%	-18.8% & Down	Total Employment 1996	Total Employment 1998	Net Employment Change	Percent Employment Change
Agriculture	Agriculture, Forestry, Fishing										
	Total	**394**	**17.8%**	**23.6%**	**13.7%**	**22.8%**	**22.1%**	**2,742**	**2,724**	**-18**	**-0.7%**
Mining	Metal Mining	17	47.1%	5.9%	17.6%	17.6%	11.8%	597	656	59	9.9%
	Coal Mining	28	21.4%	17.9%	7.1%	25.0%	28.6%	4,000	4,489	489	12.2%
	Oil & Gas Extraction	424	27.6%	15.3%	19.1%	14.9%	23.1%	6,727	7,545	818	12.2%
	Nonmetallic Minerals Mining	38	21.1%	18.4%	26.3%	18.4%	15.8%	2,676	2,919	243	9.1%
	Total	**507**	**27.4%**	**15.4%**	**18.9%**	**15.8%**	**22.5%**	**14,000**	**15,610**	**1,609**	**11.5%**
Construction	General Building Contractors	486	34.0%	14.6%	11.3%	12.6%	27.6%	3,014	3,238	224	7.4%
	Heavy Construction	220	33.6%	15.5%	10.5%	14.1%	26.4%	3,674	4,110	437	11.9%
	Special Trade Construction	975	28.1%	17.2%	16.4%	16.3%	21.9%	5,923	6,436	514	8.7%
	Total	**1,681**	**30.5%**	**16.2%**	**14.2%**	**14.9%**	**24.2%**	**12,610**	**13,785**	**1,174**	**9.3%**
Manufacturing	Durable Goods	247	21.9%	19.0%	13.0%	21.1%	25.1%	4,681	4,657	-24	-0.5%
	Nondurable Goods	206	20.9%	18.0%	18.0%	24.8%	18.4%	6,657	6,461	-195	-2.9%
	Total	**453**	**21.4%**	**18.5%**	**15.2%**	**22.7%**	**22.1%**	**11,338**	**11,118**	**-219**	**-1.9%**
Transportation, Communications, & Public Utilities (TCPU	Transportation	478	21.3%	18.8%	20.1%	18.4%	21.3%	5,246	5,375	129	2.5%
	Communications & Public Utilities	150	15.3%	22.7%	18.7%	22.0%	21.3%	5,002	4,916	-86	-1.7%
	Total	**628**	**19.9%**	**19.7%**	**19.7%**	**19.3%**	**21.3%**	**10,248**	**10,292**	**43**	**0.4%**
Wholesale Trade	Durable Goods	471	17.4%	22.9%	26.3%	17.6%	15.7%	3,644	3,863	220	6.0%
	Nondurable Goods	358	21.5%	17.3%	21.8%	20.7%	18.7%	3,052	3,130	78	2.5%
	Total	**829**	**19.2%**	**20.5%**	**24.4%**	**18.9%**	**17.0%**	**6,696**	**6,993**	**297**	**4.4%**
Retail Trade	Building Materials & Garden Supplies	170	17.1%	30.6%	12.4%	23.5%	16.5%	1,690	1,714	23	1.4%
	General Merchandise Stores	40	7.5%	20.0%	7.5%	50.0%	15.0%	4,901	4,832	-70	-1.4%
	Food Stores	154	19.5%	22.1%	8.4%	29.2%	20.8%	4,961	5,075	115	2.3%
	Auto Dealers & Service Stations	432	19.0%	26.9%	11.3%	26.9%	16.0%	7,319	7,673	354	4.8%
	Apparel & Accessory Stores	150	14.7%	22.0%	10.0%	27.3%	26.0%	1,209	1,298	90	7.4%
	Furniture & Home Furnishings	211	22.3%	21.3%	15.6%	25.1%	15.6%	1,265	1,286	21	1.7%
	Eating & Drinking Places	775	16.3%	21.3%	10.3%	29.5%	22.6%	14,453	13,974	-479	-3.3%
	Miscellaneous Retail	662	19.5%	19.5%	16.0%	21.9%	23.1%	4,397	4,321	-76	-1.7%
	Total	**2,594**	**18.0%**	**22.4%**	**12.3%**	**26.6%**	**20.6%**	**40,194**	**40,173**	**-21**	**-0.1%**
Finance, Insurance & Real Estate (FIRE)	Finance	227	17.2%	21.1%	33.9%	17.2%	10.6%	3,737	4,019	282	7.5%
	Insurance	298	17.4%	17.8%	29.5%	18.1%	17.1%	2,110	2,318	208	9.8%
	Real Estate	450	18.2%	14.4%	37.3%	13.8%	16.2%	1,480	1,510	30	2.0%
	Total	**975**	**17.7%**	**17.0%**	**34.2%**	**15.9%**	**15.2%**	**7,327**	**7,847**	**519**	**7.1%**
Services	Hotels & Other Lodging Places	435	16.6%	22.8%	14.7%	25.3%	20.7%	8,199	8,113	-87	-1.1%
	Personal Services	300	20.0%	20.0%	16.3%	18.3%	25.3%	1,695	1,723	27	1.6%
	Business Services	531	25.6%	16.0%	18.8%	16.0%	23.5%	4,375	5,070	696	15.9%
	Auto Repair, Services & Parking	365	24.9%	20.8%	17.5%	19.2%	17.5%	1,706	1,779	72	4.2%
	Miscellaneous Repair Service	181	18.2%	17.1%	24.9%	13.8%	26.0%	724	732	9	1.2%
	Motion Pictures	71	12.7%	28.2%	8.5%	23.9%	26.8%	692	658	-34	-4.9%
	Amusement & Recreation Services	289	18.7%	21.1%	21.1%	17.3%	21.8%	2,299	2,477	178	7.7%
	Health Services	701	17.4%	24.0%	21.4%	21.1%	16.1%	9,520	9,557	37	0.4%
	Legal Services	319	14.7%	15.7%	32.9%	18.2%	18.5%	1,137	1,144	7	0.6%
	Educational Services	34	32.4%	11.8%	23.5%	11.8%	20.6%	623	696	73	11.7%
	Social Services	236	12.7%	26.3%	14.4%	30.9%	15.7%	4,781	4,790	8	0.2%
	Museums & Botanical Gardens	9	0.0%	33.3%	0.0%	55.6%	11.1%	264	242	-22	-8.3%
	Membership Organizations	279	15.8%	17.9%	27.2%	22.2%	16.8%	2,154	2,112	-42	-1.9%
	Engineering & Management Services	538	17.7%	20.4%	25.7%	14.7%	21.6%	3,060	3,049	-11	-0.4%
	Private Households	169	17.2%	15.4%	42.0%	10.1%	15.4%	390	393	4	0.9%
	Services, Not Elsewhere Classified	34	5.9%	8.8%	52.9%	8.8%	23.5%	76	73	-2	-3.2%
	Total	**4,491**	**18.6%**	**20.2%**	**22.0%**	**19.2%**	**20.0%**	**41,695**	**42,607**	**913**	**2.2%**
Government	Federal Govt. Public Administration	30	23.3%	13.3%	26.7%	26.7%	10.0%	2,512	2,620	107	4.3%
	Federal Govt. Other	10	0.0%	20.0%	30.0%	50.0%	0.0%	3,485	3,511	26	0.7%
	State Govt. Public Administration	236	10.6%	28.8%	19.1%	28.8%	12.7%	9,043	8,818	-224	-2.5%
	State Govt. Other	210	7.1%	30.0%	28.1%	27.6%	7.1%	24,997	25,518	520	2.1%
	Local Govt. Public Administration	63	6.3%	34.9%	31.7%	22.2%	4.8%	5,952	6,098	147	2.5%
	Local Govt. Other	9	11.1%	22.2%	22.2%	33.3%	11.1%	5,566	5,449	-117	-2.1%
	Total	**558**	**9.3%**	**28.9%**	**24.6%**	**28.0%**	**9.3%**	**51,555**	**52,014**	**459**	**0.9%**
Total		**13,110**	**20.1%**	**20.1%**	**19.5%**	**20.3%**	**19.9%**	**198,406**	**203,162**	**4,756**	**2.4%**

** Primary Industry refers to the industry where individuals earn the latgest share of their wages.*
*** All firms included in the aggregate totals by industry in this table had to have at least one job in 1995, 1996, and 1998. The employment*

firms in these two industries (roughly two-thirds) shared in the employment growth that occured. Only 15.2 percent of FIRE firms and 17.0 percentage of Wholesale Trade firms experienced serious declines in employment.

More than one-third (4,491) of all Wyoming firms fall within the Services industry. So in large part, it more closely reflects general trends in employment growth represented by the categories used in Table 1-1 (see page 18). Approximately 20 percent of Services firms are represented in each of the five categories. The diversity of firms and functions represented within the Services industry veils the dynamic level of employment change that occurs within some of this major industry's subcategories. For example, Services includes some emerging industries using new technologies (e.g., Internet-based companies, categorized under the generic label of business services, educational services, or health services). It also includes traditional services (e.g., legal services or domestic workers in private households) whose employment growth is associated more often than not with population size.

The underlying dynamic of demand may be highly turbulent even where industry growth is stagnant. In Retail Trade, for example, change in total employment declined by only -0.1 percent, representing the industry as relatively stable in its employment level. Yet, nearly half of all firms recorded employment decreases, placing them in the two lower employment growth categories. Adding the two lowest growth categories reveals a majority of apparel & accessory stores (53.3%), eating and drinking places (51.8%), food stores (50.0%), and general merchandise stores (65.0%) experienced decreases in employment below -0.8 percent. Only 12.3 percent of firms, a smaller percentage than in any other major industry, fell in the middle category representing stable employment. Therefore, in many of the Retail industries, fewer firms are responsible for the highest percentage of employment growth. This trend may represent growth at various shopping hubs across Wyoming, at the expense of retail employment in smaller firms and in less-connected communities.

How Do We Count Jobs?

Table 1-2 (see page 20) demonstrates the differences that exist between the two data sets Research & Planning (R&P) relies on to conduct and report labor market analyses. Differences in the numbers of total jobs that R&P uses in this report and those published in *Where Are the Jobs? What Do They Pay?: 1998 Annual Covered Employment and Wages* can be explained by the time lag between the two publications. Table 1-2 represents this total count of jobs (220,665) under the heading, 'All (UI) Covered Jobs.'

Our present study primarily limits itself to tracking only 'State UI Covered Jobs,' because our Wage Records Database (which contains information on individuals and their demographic-economic characteristics) does not include federal employees.[5] Federal employees are exempt from State UI Coverage. Because one of our purposes here is to show the relationship between different units of analysis (e.g., jobs and individuals), we need to limit comparisons we make to the total count of actual jobs (213,551) held by the number of individuals (295,610) on whom we have employment and wage information. Therefore, we exclude the 3.2 percent of Wyoming jobs relating to federal employment from the analysis.

The job count in Table 1-2 represents the average number of jobs or "positions" held each month in 1998 (N = 213,551). During 1998, 295,610 persons occupied those positions or jobs. At any point in time during 1998, 295,610 persons were interacting with 213,551 jobs located in more than 13,100 firms (see Tables 1-1 and 2-7, page 37). These firms were themselves undergoing expansion and contraction.

Characteristics of Wyoming's Workforce

R&P has few facts as descriptive of Wyoming's workforce and as straightforward to communicate as age, gender, and earnings. This section provides a composite snapshot of these employee

Table 1-2: Wyoming Jobs by Industry, and Persons by Industry of Primary Employer, 1998

Primary Industry*	Industry	All Covered Jobs**	State UI Covered Jobs	Percent Difference	Persons on UI Wage Records***
Agriculture	**Total**	**3,211**	**3,211**	**0.0%**	**5,382**
Mining	Metal Mining	690	690	0.0%	912
	Coal Mining	4,504	4,504	0.0%	5,323
	Oil & Gas Extraction	8,514	8,514	0.0%	11,759
	Nonmetallic Minerals Mining	3,128	3,128	0.0%	3,397
	Total	**16,836**	**16,836**	**0.0%**	**21,391**
Construction	General Building Contractors	3,916	3,916	0.0%	6,786
	Heavy Construction	4,489	4,489	0.0%	9,509
	Special Trade Construction	7,578	7,578	0.0%	12,548
	Total	**15,983**	**15,983**	**0.0%**	**28,843**
Manufacturing	Durable Goods	5,114	5,114	0.0%	6,823
	Nondurable Goods	5,818	5,818	0.0%	8,452
	Total	**10,932**	**10,932**	**0.0%**	**15,275**
Transportation, Communication & Public Utilities (TCPU)	Transportation***	5,987	5,987	0.0%	7,938
	Communications & Public Utilities	5,119	5,119	0.0%	5,867
	Total	**11,106**	**11,106**	**0.0%**	**13,805**
Wholesale Trade	Durable Goods	4,348	4,348	0.0%	5,239
	Nondurable Goods	3,444	3,444	0.0%	4,219
	Total	**7,792**	**7,792**	**0.0%**	**9,458**
Retail Trade	Building Materials & Garden Supplies	2,018	2,018	0.0%	2,726
	General Merchandise Stores	4,936	4,936	0.0%	6,960
	Food Stores	5,511	5,511	0.0%	7,645
	Auto Dealers & Service Stations	7,991	7,991	0.0%	11,219
	Apparel & Accessory Stores	1,493	1,493	0.0%	2,068
	Furniture & Home Furnishing Stores	1,495	1,495	0.0%	1,994
	Eating & Drinking Places	16,700	16,700	0.0%	25,093
	Miscellaneous Retail	4,930	4,930	0.0%	6,582
	Total	**45,074**	**45,074**	**0.0%**	**64,287**
Finance, Insurance & Real Estate (FIRE)	Finance	4,298	4,298	0.0%	5,123
	Insurance	2,358	2,358	0.0%	2,924
	Real Estate	1,888	1,888	0.0%	2,458
	Total	**8,544**	**8,544**	**0.0%**	**10,505**
Services	Hotels & Other Lodging Places	9,194	9,194	0.0%	17,152
	Personal Services	1,921	1,921	0.0%	2,559
	Business Services	6,573	6,573	0.0%	10,948
	Auto Repair, Services, Parking	1,995	1,995	0.0%	2,643
	Miscellaneous Repair Services	846	846	0.0%	1,106
	Motion Pictures	721	721	0.0%	918
	Amusement & Recreation Services	2,667	2,667	0.0%	4,340
	Health Services	10,288	10,288	0.0%	12,245
	Legal Services	1,261	1,261	0.0%	1,528
	Educational Services	740	740	0.0%	1,323
	Social Services	5,542	5,542	0.0%	7,006
	Museums, Botanical Gardens	261	261	0.0%	377
	Membership Organizations	1,918	1,918	0.0%	2,696
	Engineering & Management Services	3,481	3,481	0.0%	4,601
	Private Households	584	584	0.0%	780
	Services, Not Elsewhere Classified	114	114	0.0%	153
	Total	**48,106**	**48,106**	**0.0%**	**70,375**
Government	Federal Govt. Public Administration*****	3,541	0	-100.0%	248
	Federal Govt. Other*****	3,573	0	-100.0%	643
	State Govt. Public Administration	4,861	4,861	0.0%	6,699
	State Govt. Other	6,686	6,686	0.0%	6,305
	Local Govt. Public Administration	8,829	8,829	0.0%	10,601
	Local Govt. Other	25,591	25,591	0.0%	31,630
	Total	**53,081**	**45,967**	**-13.4%**	**56,126**
Not Available	**Total**				**163**
Total		**220,665**	**213,551**	**-3.2%**	**295,610**

** Primary Industry refers to the industry where individuals earn the largest share of their wages.*
***Data obtained from ES-202 data files that were more current than those used to produce **Where Are the Jobs? What Do They Pay? 1998 Annual Covered Employment And Wages**.*
**** Numbers are individuals who appeared in Wage Records during 1998 based on their Primary Employer only.*
***** Most Railroad Employees are not covered by State Unemployment Insurance (UI) and are not included in this table.*
****** These individuals are covered by Unemployment Compensation for Federal Employees (UCFE).*

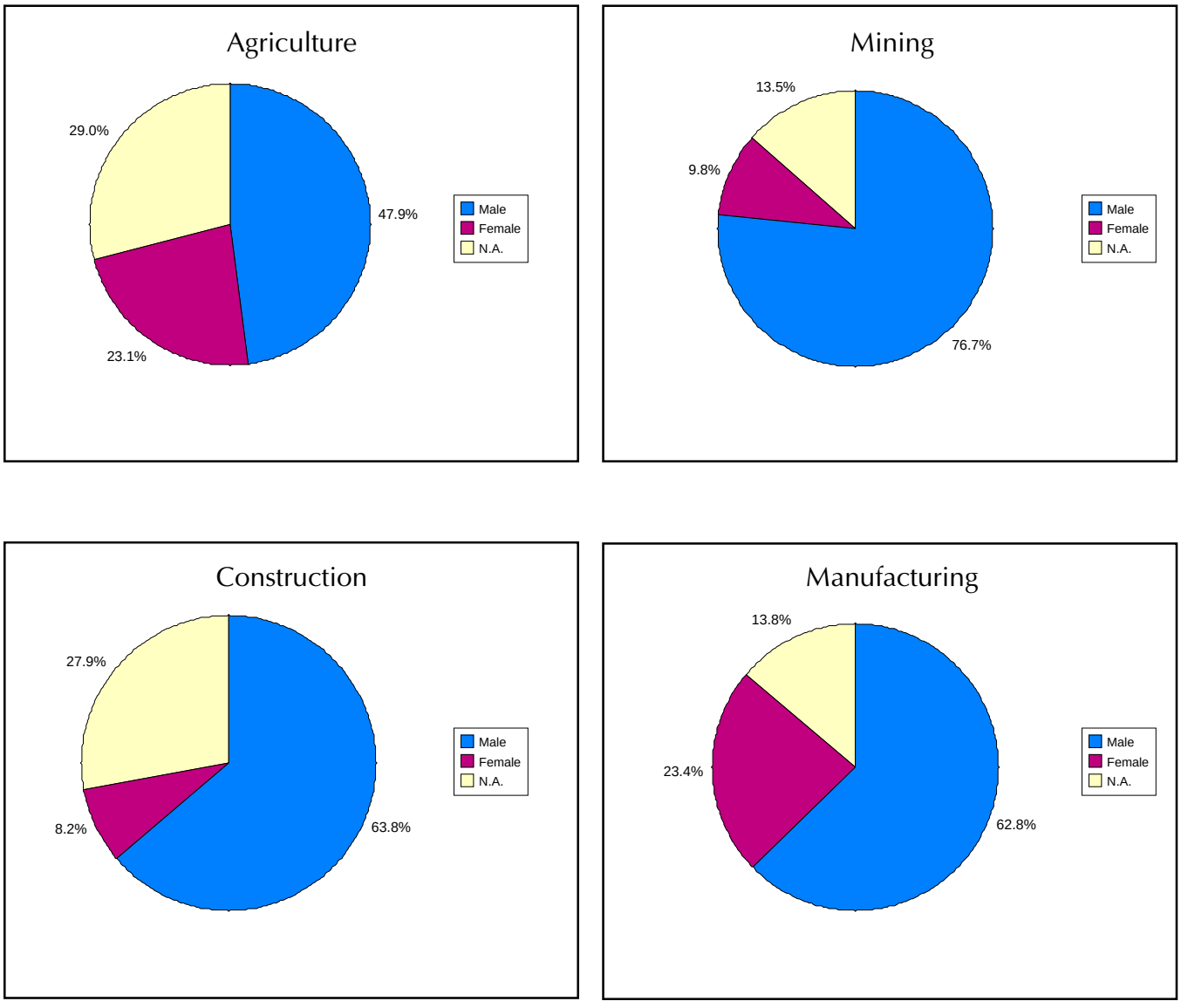
characteristics. (See Appendix A, Section 1a, for detailed sources of labor force and demographic data.)

Of the 295,610 persons who worked at any time during 1998 (see Appendix B), 42.0 percent of all workers were male, 37.3 percent female, with information on gender unavailable for 20.7 percent of our records. If the ratio of males to females (1.13) in the workforce for whom we have gender information is applied to those for whom gender information is not available, the workforce is estimated to be 47 percent female and 53 percent male.

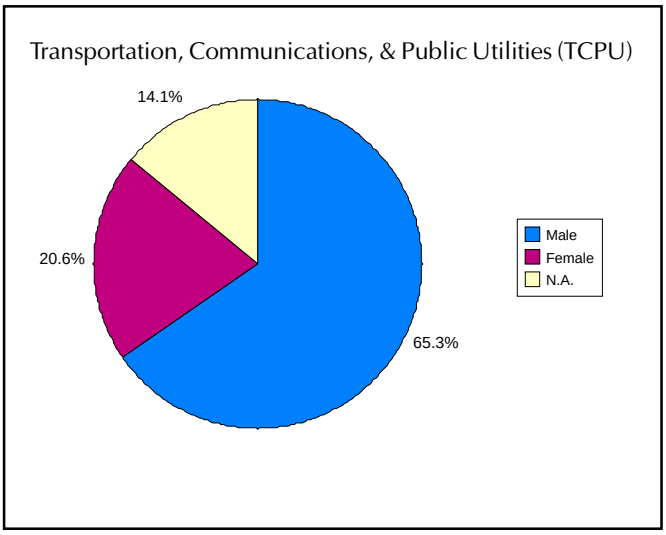
Figures 1-1 describe the distribution of employees by gender among 10 major (UI covered) industrial categories. Each pie chart identifies the proportion of male and female employees within a major industry. Highly detailed data on gender distribution are included in Appendix B. The segment of each pie chart labeled 'Not Available' (N.A.) indicates the percentage of employment for which demographic information relating to gender is currently unavailable.[6]

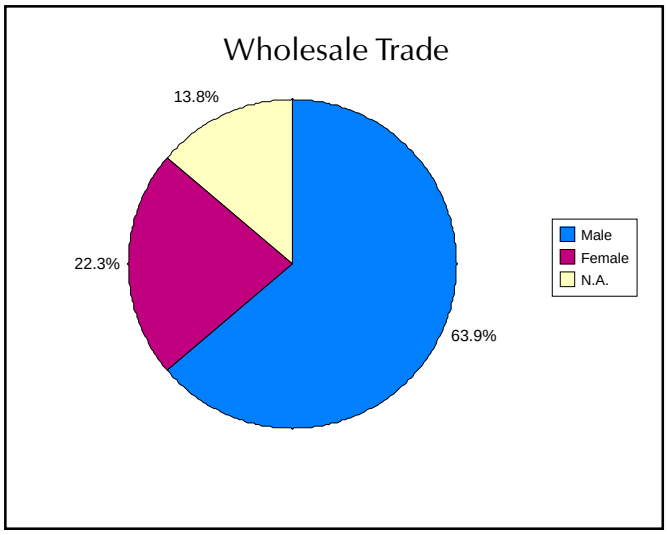
The pie charts show that males constitute the largest segment of the workforce in the Goods Producing sector: Agriculture, Mining, Construction, and Manufacturing. Detailed industry specific data in Appendix B, for example, show that 69.4 percent of all individuals working in durable goods

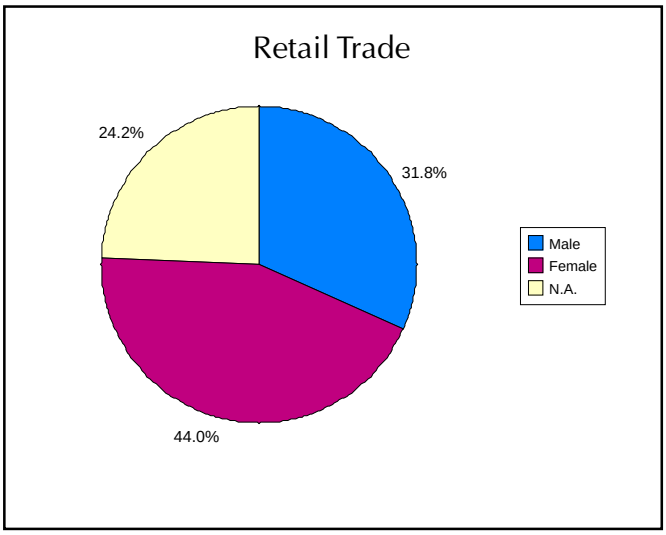
Figures 1-1: Individuals by Primary Industry and Gender, 1998

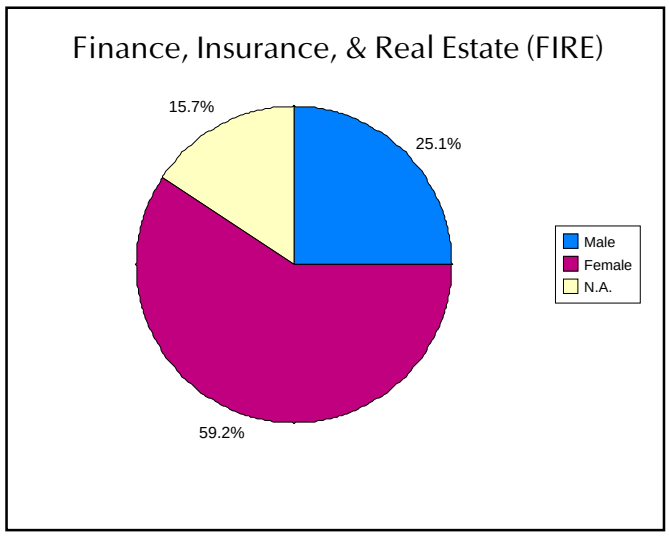


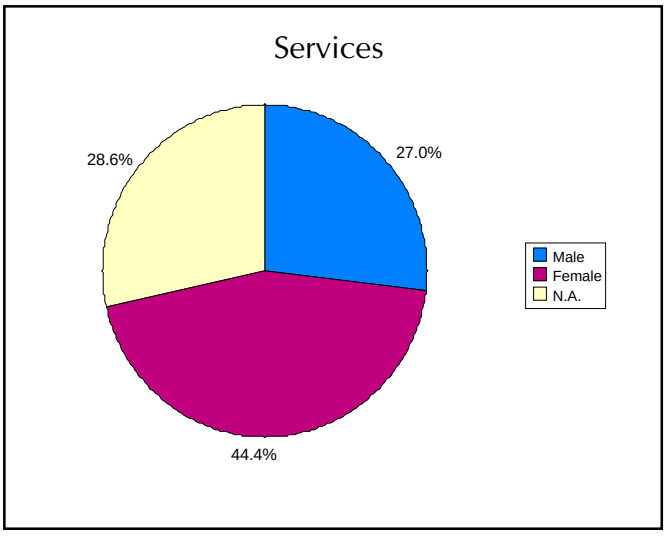
Figures 1-1: Individuals by Primary Industry and Gender, 1998 (Continued)

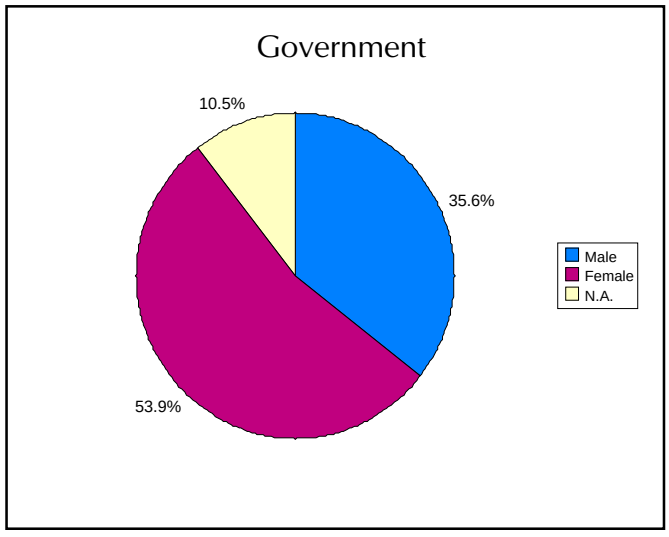












manufacturing are male. Males also form a majority in Transportation, Communications, & Public Utilities (TCPU) and Wholesale Trade. Mining and TCPU, where males comprise about three-fourths of employment, traditionally offer the highest average wages among industries. By comparison, female employment is concentrated in Retail Trade, FIRE, Services, and Government. Retail Trade and Services employ the largest numbers of all Wyoming employees; they also traditionally pay among the lowest average wages. Government includes local school districts as well as public administrative agencies, so a large percentage of female employment in Government can be attributed to the occupations of public school teachers and administrative staff.

The distribution of age in Wyoming's workforce is clearly reflective of the distribution of age in the population in general. Persons aged 35 to 44 years dominate the market. This age group made up 26.3 percent of the workforce in 1998 while those aged 45 to 54 made up 20.6 percent, and those aged 25 to 34 comprised 20.9 percent. (These estimates are determined by prorating the number of persons for which demographic information is not available, 20.7 percent, to each age category defined in Appendix C.) In effect, over the course of the projection's period (1998 to 2008) a large share of Wyoming's workforce will mature into the age category (45-54) of greatest wage and salary earnings (see Table 1-3 and Appendix E).

Figures 1-2 (see page 24) provide a series of bar charts identifying the number of employees by age group within each major industry. Tabular data detailed by industry on these age groups are available in Appendix C. The count of employees for whom demographic information is missing is identified with 'N.A.' Agriculture, Construction, Retail Trade, and Services have the highest proportion of missing demographics. (See Appendix A, Section 1b for a discussion.)

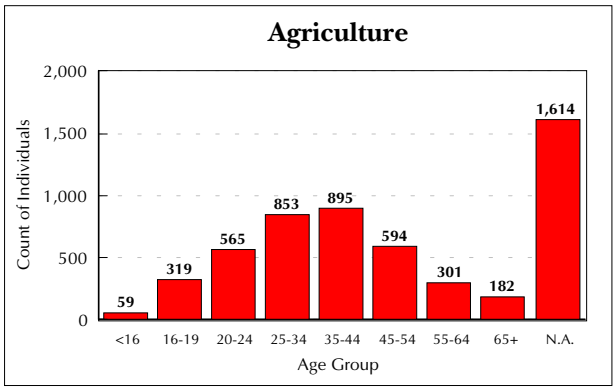
Table 1-3: Annual Mean Earnings by Gender and Age, 1998

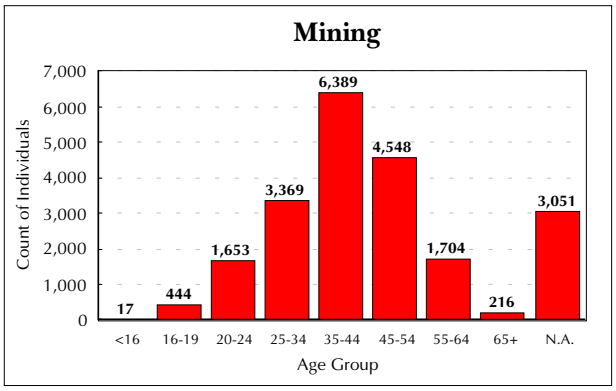
Gender	Age Group	Number	Mean Earnings
Male	<16	652	$1,376
	16-19	8,948	$3,748
	20-24	14,982	$10,234
	25-34	26,483	$20,189
	35-44	31,623	$31,242
	45-54	25,072	$37,243
	55-64	11,416	$32,557
	65+	3,424	$15,248
	N.A.	1,551	$25,968
	Total	**124,151**	**$25,036**
Female	<16	609	$1,191
	16-19	8,689	$3,107
	20-24	13,217	$6,748
	25-34	21,984	$12,305
	35-44	29,458	$16,606
	45-54	22,810	$18,962
	55-64	9,664	$16,131
	65+	2,806	$7,910
	N.A.	1,040	$12,426
	Total	**110,277**	**$13,604**
N.A.	<16		
	16-19	14	$2,689
	20-24	33	$5,226
	25-34	52	$7,636
	35-44	45	$12,104
	45-54	13	$20,579
	55-64	7	$12,811
	65+	3	$15,223
	N.A.	61,015	$8,885
	Total	**61,182**	**$8,886**
Total	<16	1,261	$1,286
	16-19	17,651	$3,432
	20-24	28,232	$8,597
	25-34	48,519	$16,603
	35-44	61,126	$24,175
	45-54	47,895	$28,532
	55-64	21,087	$25,023
	65+	6,233	$11,944
	N.A.	63,606	$9,360
	Total	**295,610**	**$17,429**

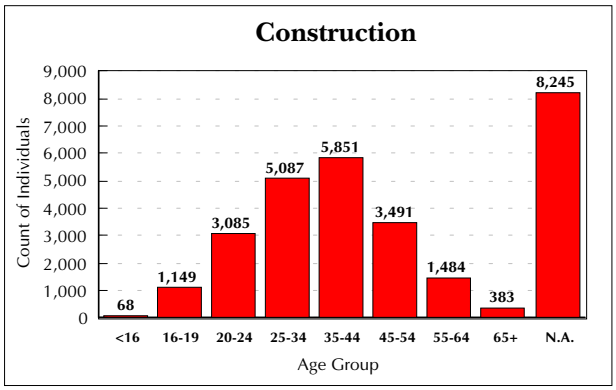
Comparing the bar charts shows that most young workers (those in the <16, 16-19, and 20-24 age groups, for whom detailed data are found in Appendix C) found primary employment in 1998 in Retail Trade (18,642) and Services (11,134), with a fair number in Construction (4,302). These industries, therefore, are more dependent than most on a steady supply of young workers. This dependency is understated in the bar charts because of the higher number of employees in these industries for whom demographics are not known.

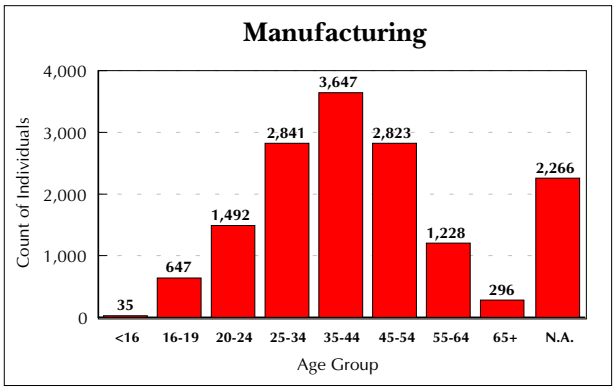
Mining, Manufacturing, TCPU, Wholesale Trade, FIRE, and Government all employ a substantial percentage of workers between the ages of 45 and 54. These individuals, born between the years 1946-1955, comprise the first half of the 'baby boom' generation. They will reach the traditional retirement

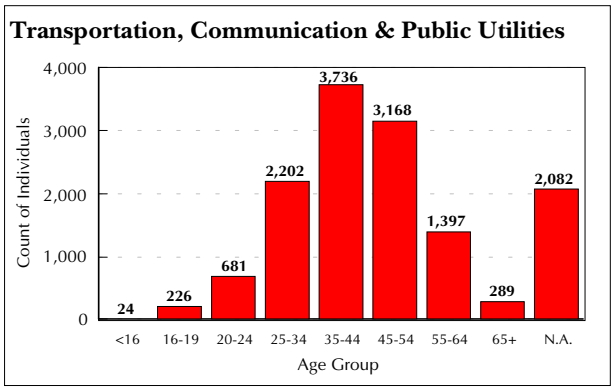
Figures 1-2: Individuals by Major Industry and Age, 1998

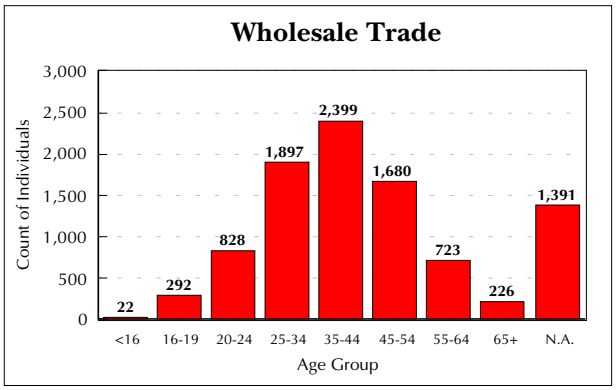


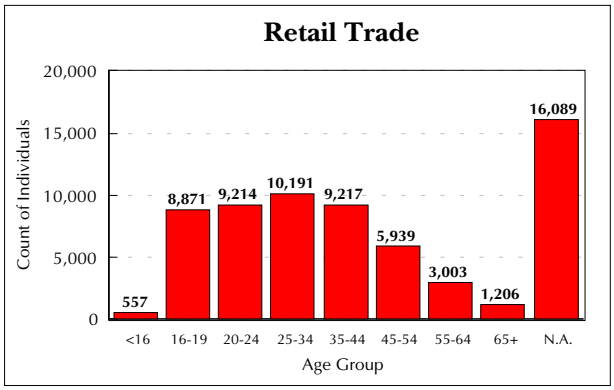


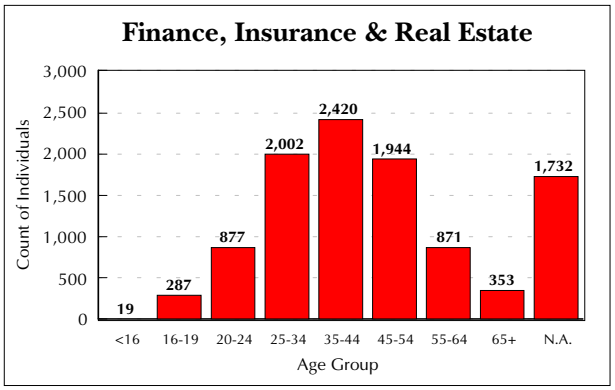




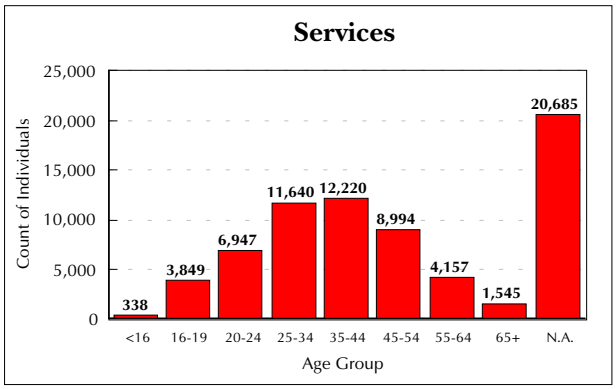


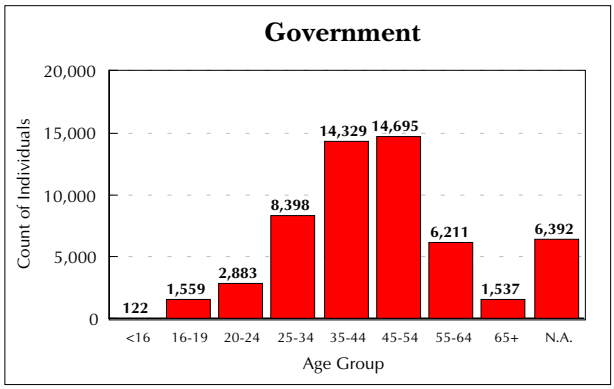






Figures 1-2: Individuals by Major Industry and Age, 1998 (Continued)





age, or may have an option to retire early in the next 10-15 years. Chapter 2 discusses retirement as a factor in replacement need. Many of the firms in these six industries will begin to face challenges over the 1998-2008 period brought on by demographic change among their incumbent workers.

Appendix D includes a table illustrating the annual percent change occurring in the various age groups over the decade 1990-1999. During the 1990-1999 period, the median age of Wyomingites increased to 36.1 from 32.0 years. Populations of only two other states, Montana and Vermont, aged more quickly than Wyoming. While the median age of the nation grew by 2.4 years, Wyoming's more rapid aging reflects the out-migration of individuals in the 20-34 year-old age group and a deficit in the relative share of this age group in Wyoming's labor force compared to the country as a whole. Montana (+3.7 years) and North Dakota (+3.5 years) demonstrated similar rates of growth suggesting that the out-migration of youth is, to some extent, a regional phenomenon. In the near term, the inability of the state to retain the 20-34 year-old age group may serve as a constraint on a more rapid expansion and diversification of the economy. Late in the next decade, the loss of this population group can affect our ability to replace those leaving the labor market as mature members of the boom generation begin reaching traditional retirement age.[7]

The earnings of individuals are associated with work opportunities available and demographic characteristics. Worker attachment and utilization will be discussed in Chapter 2.

In Table 1-3 (see page 23) we can see quite clearly that earnings are associated with both age and gender.[8] For both genders, earnings increase with age, peaking for the age group 45-54 and declining thereafter. Earnings for both males and females double from age group 20 to 24 to age group 25 to 34. Earnings for young females, however, are lower than for males and never catch up to males among older age groups.

Earnings for females (ages 20-24) at $6,748, on average in 1998, reflect 65.9 percent of the earnings of males ($10,234). However, by the peak earnings years (ages 45-54) females earn only 53.3 percent ($18,962) of the level earned by males ($37,243). As we can see from Appendix E, the gap in earnings between males and females at the peak earnings age level (45-54) is associated with the industry of employment.

The earnings gap between males and females in the age category of peak earnings (45-54) is much lower in Government (where females earn $22,681 on average or 67.6 percent of male earnings ($33,567), Construction (65.1%), Mining (65.0%), and TCPU (58.2%). The earnings gap is much greater in Services where women, at the peak of their earnings age bracket, earn only 44.2 percent ($16,099) of male earnings ($36,389). In Retail Trade, females earn only 44.6 percent of their male counterparts. The faster growing private sector Services Producing industries are also the industries with the widest

gap in earnings between males and females. As the baby boom generation of Wyoming matures and as Services employment grows, so too, does the gap in earnings between males and females.

In summary, over the forecast horizon, 26.3 percent of the workforce (those aged 35 to 44 in 1998) will be aging into their peak earnings years. In contrast, given the stronger anticipated growth of lower wage private sector Services Producing industries, and the larger gap in earnings for the 47.0 percent of the workforce that is female in those expanding industries, it is unclear to what extent the earnings over the forecast period will be sufficient to maintain the current workforce in Wyoming.

Chapter 2
The Flow of Labor: Workforce Interactions with the Labor Market

> *"[We need to] determine the effectiveness of the labor market from the employer's perspective (demand side) . . . What percentage of the job openings are filled through the workforce activities/services such as the One-Stop Centers?"* — Wyoming Workforce Development Council Minutes, June 6, 2000

How Do Workers and Employers Interact?

Occupational vacancies occur for a variety of reasons. Job growth is one explanation. Besides growth, other market characteristics are associated with increasing demand for labor in certain industries and occupations, but not in others. This chapter discusses three market characteristics:

- characteristics of the job — how human resources are used in terms of worker characteristics and industry characteristics,
- worker characteristics likely to lead to vacancies, and
- industry characteristics associated with the normal flow of workers into and out of jobs — market interaction.

Workforce Utilization

Chapter 1 concluded with a discussion of workers' earnings. Earnings represent a measure of the extent to which a firm or an industry fully and efficiently utilizes the available supply of labor. The working proposition of this publication is that the utilization of labor is associated with its availability. Under-utilized labor is less likely to be available than fully-utilized labor.

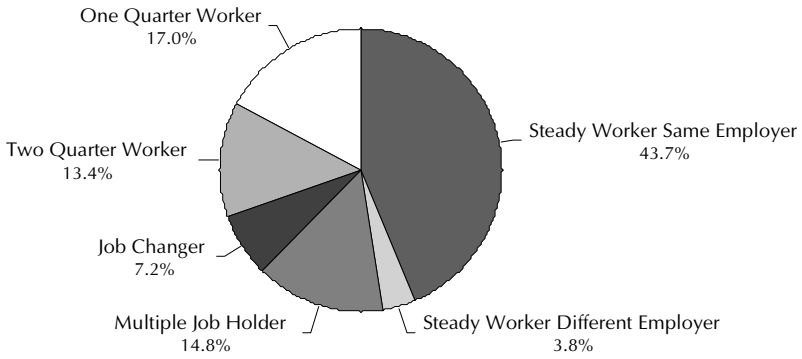
In this chapter, we examine how different industries utilize labor. While the manner in which industries utilize labor has quality of life and community effects, our focus is on identifying industry efficiency and supply requirements. Subsequent chapters examine how Wyoming's labor market utilizes educational and training resources, and describe the competitive position of the state's wage rates.

Earnings are associated with demographics, and both earnings and demographics are associated with the extent to which industries utilize labor. One measure of utilization is the mix of full- and part-time work. This measure is, however, unavailable to us. Instead, we can describe worker attachment and how extensively each industry utilizes the available human resources with factors constructed from available administrative databases. Overcoming a circumstance in which it may be difficult to obtain labor may in fact turn on the question of whether employers can more fully utilize locally available employed or underemployed workers.

Labor Attachment

The concept of labor utilization can be approached from the standpoint of worker behavior (supply), the standpoint of industry efficiency (demand), and from the standpoint of the interaction between the two. Traditionally, worker behavior has been described in terms of the extent of labor attachment to the market, or labor's sustained patterns of interaction with available demand.

Figure 2-1: Total Employment by Labor Attachment, 1998



The extent to which the workforce is attached to the labor market is illustrated in Figure 2-1. Figure 2-1 shows Wyoming's employment distributed among six categories of labor attachment. The categories were developed by Research & Planning (R&P) (see Glossary, Attachment to Labor Market). As can be seen in Table 2-1 (see page 29), less than half of Wyoming's total workforce worked steadily (those working at least three quarters) during 1998.[9] In 1998, 43.7 percent of the workforce worked for the same employer and an additional 3.8 percent had consistent work opportunities (not necessarily in the same industry) but changed employers. Though there are individual exceptions in the other categories, the majority of workers had a more tenuous relationship with the market. Appendix F provides detailed tabular data on employee utilization and labor attachment.

The number of steady workers includes both those who worked for the same employer (SE) at least three quarters or for different employers (DE) at least three quarters. Large numbers of Wyoming workers held jobs during only one or two quarters of the year in Wyoming. This pattern is indicative of seasonal job holding such as summer jobs held by students or contracts for highway construction work. Also, in 1998, 43,829 workers were characterized as multiple-job holders, meaning they chose to adopt a strategy of working two or more jobs simultaneously, supplementing their earnings and supporting their attachment to Wyoming.

Labor market attachment varies significantly by demographic group. In general, from Appendix G, younger workers worked fewer quarters and experienced a lower level of attachment to the labor market. For example, 24.4 percent of all individuals aged 20-24 years worked as steady workers for a single employer. Of this same age group, 25.6 percent worked as multiple-job holders, significantly higher than the 14.8 percent from all age groups who fell into this category. In contrast, 67.2 percent of 45-54 year-old males and 63.0 percent of 45-54 year-old females held steady employment with a single employer.

Industry Utilization

The industrial efficiency of labor utilization may be defined in terms of the number of persons working the available number of jobs. Based on the data in Table 1-2 (see page 18), we can illustrate how human resources are utilized in Wyoming by computing the ratio of people working to jobs worked by industry. Table 1-2 (see page 20) shows that for all industries 295,610 persons worked at any time during the year, and 213,551 State Unemployment Insurance (UI) Covered jobs, a ratio of 1.38 persons per job. In Transportation, Communications, & Public Utilities (TCPU), 13,805 persons worked at 11,106 jobs, a ratio of 1.24 persons per job, demonstrating a more efficient use of available human resources. However, "employment [in TCPU] is forecast to dip . . . in 2001 and continue to decline . . . [through] 2008."[10] In comparison, in the growth industry of Services, 70,375 persons worked at 48,106 jobs, a ratio of 1.46 persons per job. Based on these ratios, Services used 17.7 percent more persons per job than Transportation, Communications, & Public Utilities (TCPU) and 6.0 percent more persons than the

Table 2-1: Employee Attachment to the Labor Market by Industry, 1998

Primary Industry*	Industry		Attachment to the Labor Market: Steady Worker Same Employer	Steady Worker Different Employer	Multiple Job Holder	Job Changer	Two Quarter Worker	One Quarter Worker	Total
Agriculture	**Total**	**Count**	**2,000**	**194**	**600**	**310**	**991**	**1,287**	**5,382**
		Row %	**37.2**	**3.6**	**11.1**	**5.8**	**18.4**	**23.9**	**100.0**
Mining	Metal Mining	Count	523	26	105	76	90	92	912
		Row %	57.3	2.9	11.5	8.3	9.9	10.1	100.0
	Coal Mining	Count	3,387	100	483	741	271	341	5,323
		Row %	63.6	1.9	9.1	13.9	5.1	6.4	100.0
	Oil & Gas Extraction	Count	5,549	499	1,631	1,020	1,155	1,905	11,759
		Row %	47.2	4.2	13.9	8.7	9.8	16.2	100.0
	Nonmetallic Minerals Mining	Count	2,606	55	276	91	170	199	3,397
		Row %	76.7	1.6	8.1	2.7	5.0	5.9	100.0
	Total	**Count**	**12,065**	**680**	**2,495**	**1,928**	**1,686**	**2,537**	**21,391**
		Row %	**56.4**	**3.2**	**11.7**	**9.0**	**7.9**	**11.9**	**100.0**
Construction	General Building Contractors	Count	2,020	371	1,001	594	1,152	1,648	6,786
		Row %	29.8	5.5	14.8	8.8	17.0	24.3	100.0
	Heavy Construction	Count	2,524	503	1,322	731	1,477	2,952	9,509
		Row %	26.5	5.3	13.9	7.7	15.5	31.0	100.0
	Special Trade Construction	Count	4,036	641	1,832	1,006	1,847	3,186	12,548
		Row %	32.2	5.1	14.6	8.0	14.7	25.4	100.0
	Total	**Count**	**8,580**	**1,515**	**4,155**	**2,331**	**4,476**	**7,786**	**28,843**
		Row %	**29.7**	**5.3**	**14.4**	**8.1**	**15.5**	**27.0**	**100.0**
Manufacturing	Durable Goods	Count	3,518	265	882	553	709	896	6,823
		Row %	51.6	3.9	12.9	8.1	10.4	13.1	100.0
	Nondurable Goods	Count	4,876	255	1,144	476	788	913	8,452
		Row %	57.7	3.0	13.5	5.6	9.3	10.8	100.0
	Total	**Count**	**8,394**	**520**	**2,026**	**1,029**	**1,497**	**1,809**	**15,275**
		Row %	**55.0**	**3.4**	**13.3**	**6.7**	**9.8**	**11.8**	**100.0**
Transportation, Communications, & Public Utilities (TCPU)	Transportation	Count	3,693	262	1,163	607	915	1,298	7,938
		Row %	46.5	3.3	14.7	7.6	11.5	16.4	100.0
	Communications & Public Utilities	Count	3,958	105	615	321	444	424	5,867
		Row %	67.5	1.8	10.5	5.5	7.6	7.2	100.0
	Total	**Count**	**7,651**	**367**	**1,778**	**928**	**1,359**	**1,722**	**13,805**
		Row %	**55.4**	**2.7**	**12.9**	**6.7**	**9.8**	**12.5**	**100.0**
Wholesale Trade	Durable Goods	Count	3,063	201	584	452	348	591	5,239
		Row %	58.5	3.8	11.1	8.6	6.6	11.3	100.0
	Nondurable Goods	Count	1,974	152	588	485	432	588	4,219
		Row %	46.8	3.6	13.9	11.5	10.2	13.9	100.0
	Total	**Count**	**5,037**	**353**	**1,172**	**937**	**780**	**1,179**	**9,458**
		Row %	**53.3**	**3.7**	**12.4**	**9.9**	**8.2**	**12.5**	**100.0**
Retail Trade	Building Materials & Garden Supplies	Count	1,256	111	362	264	340	393	2,726
		Row %	46.1	4.1	13.3	9.7	12.5	14.4	100.0
	General Merchandise Stores	Count	2,404	311	960	407	1,662	1,216	6,960
		Row %	34.5	4.5	13.8	5.8	23.9	17.5	100.0
	Food Stores	Count	2,929	514	1,306	754	1,047	1,095	7,645
		Row %	38.3	6.7	17.1	9.9	13.7	14.3	100.0
	Auto Dealers & Service Stations	Count	4,534	597	1,744	1,164	1,487	1,693	11,219
		Row %	40.4	5.3	15.5	10.4	13.3	15.1	100.0
	Apparel & Accessory Stores	Count	629	86	407	156	350	440	2,068
		Row %	30.4	4.2	19.7	7.5	16.9	21.3	100.0
	Furniture & Home Furnishing Stores	Count	821	93	303	185	230	362	1,994
		Row %	41.2	4.7	15.2	9.3	11.5	18.2	100.0
	Eating & Drinking Places	Count	6,307	1,499	4,607	2,063	4,732	5,885	25,093
		Row %	25.1	6.0	18.4	8.2	18.9	23.5	100.0
	Miscellaneous Retail	Count	2,550	261	1,065	472	1,004	1,230	6,582
		Row %	38.7	4.0	16.2	7.2	15.3	18.7	100.0
	Total	**Count**	**21,430**	**3,472**	**10,754**	**5,465**	**10,852**	**12,314**	**64,287**
		Row %	**33.3**	**5.4**	**16.7**	**8.5**	**16.9**	**19.2**	**100.0**

** Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table 2-1: Employee Attachment to the Labor Market by Industry, 1998 (Continued)

Primary Industry*	Industry		Attachment to the Labor Market: Steady Worker Same Employer	Steady Worker Different Employer	Multiple Job Holder	Job Changer	Two Quarter Worker	One Quarter Worker	Total
Finance, Insurance & Real Estate (FIRE)	Finance	Count	3,073	111	761	406	361	411	5,123
		Row %	60.0	2.2	14.9	7.9	7.0	8.0	100.0
	Insurance	Count	1,738	80	414	232	221	239	2,924
		Row %	59.4	2.7	14.2	7.9	7.6	8.2	100.0
	Real Estate	Count	893	108	415	219	341	482	2,458
		Row %	36.3	4.4	16.9	8.9	13.9	19.6	100.0
	Total	**Count**	**5,704**	**299**	**1,590**	**857**	**923**	**1,132**	**10,505**
		Row %	**54.3**	**2.8**	**15.1**	**8.2**	**8.8**	**10.8**	**100.0**
Services	Hotels & Other Lodging Places	Count	4,291	749	2,115	890	4,879	4,228	17,152
		Row %	25.0	4.4	12.3	5.2	28.4	24.7	100.0
	Personal Services	Count	999	95	414	196	356	499	2,559
		Row %	39.0	3.7	16.2	7.7	13.9	19.5	100.0
	Business Services	Count	2,531	601	1,792	981	1,767	3,276	10,948
		Row %	23.1	5.5	16.4	9.0	16.1	29.9	100.0
	Auto Repair Services, Parking	Count	1,154	114	341	217	296	521	2,643
		Row %	43.7	4.3	12.9	8.2	11.2	19.7	100.0
	Miscellaneous Repair Services	Count	527	38	143	115	120	163	1,106
		Row %	47.6	3.4	12.9	10.4	10.8	14.7	100.0
	Motion Pictures	Count	263	50	189	78	148	190	918
		Row %	28.6	5.4	20.6	8.5	16.1	20.7	100.0
	Amusement & Recreation Services	Count	1,000	187	757	235	950	1,211	4,340
		Row %	23.0	4.3	17.4	5.4	21.9	27.9	100.0
	Health Services	Count	5,742	382	2,261	1,251	1,091	1,518	12,245
		Row %	46.9	3.1	18.5	10.2	8.9	12.4	100.0
	Legal Services	Count	822	45	243	95	120	203	1,528
		Row %	53.8	2.9	15.9	6.2	7.9	13.3	100.0
	Educational Services	Count	557	20	92	32	200	422	1,323
		Row %	42.1	1.5	7.0	2.4	15.1	31.9	100.0
	Social Services	Count	3,006	286	1,260	493	947	1,014	7,006
		Row %	42.9	4.1	18.0	7.0	13.5	14.5	100.0
	Museums, Botanical Gardens	Count	177	9	60	13	71	47	377
		Row %	46.9	2.4	15.9	3.4	18.8	12.5	100.0
	Membership Organizations	Count	1,156	93	339	152	450	506	2,696
		Row %	42.9	3.4	12.6	5.6	16.7	18.8	100.0
	Engineering & Management Services	Count	2,330	130	495	373	520	753	4,601
		Row %	50.6	2.8	10.8	8.1	11.3	16.4	100.0
	Private Households	Count	296	28	154	49	112	141	780
		Row %	37.9	3.6	19.7	6.3	14.4	18.1	100.0
	Services, Not Elsewhere Classified	Count	66	6	20	14	12	35	153
		Row %	43.1	3.9	13.1	9.2	7.8	22.9	100.0
	Total	**Count**	**24,917**	**2,833**	**10,675**	**5,184**	**12,039**	**14,727**	**70,375**
		Row %	**35.4**	**4.0**	**15.2**	**7.4**	**17.1**	**20.9**	**100.0**
Government	Federal Govt. Public Administration	Count	87	14	23	26	45	53	248
		Row %	35.1	5.6	9.3	10.5	18.1	21.4	100.0
	Federal Govt. Other	Count	226	44	72	56	161	84	643
		Row %	35.1	6.8	11.2	8.7	25.0	13.1	100.0
	State Govt. Public Administration	Count	4,712	117	932	358	343	237	6,699
		Row %	70.3	1.7	13.9	5.3	5.1	3.5	100.0
	State Govt. Other	Count	4,202	105	705	228	695	370	6,305
		Row %	66.6	1.7	11.2	3.6	11.0	5.9	100.0
	Local Govt. Public Administration	Count	5,579	266	1,682	555	988	1,531	10,601
		Row %	52.6	2.5	15.9	5.2	9.3	14.4	100.0
	Local Govt. Other	Count	18,531	500	5,148	1,177	2,757	3,517	31,630
		Row %	58.6	1.6	16.3	3.7	8.7	11.1	100.0
	Total	**Count**	**33,337**	**1,046**	**8,562**	**2,400**	**4,989**	**5,792**	**56,126**
		Row %	**59.4**	**1.9**	**15.3**	**4.3**	**8.9**	**10.3**	**100.0**
Not Available	**Total**	**Count**		**12**	**22**	**5**	**37**	**87**	**163**
		Row %		**7.4**	**13.5**	**3.1**	**22.7**	**53.4**	**100.0**
Total		**Count**	**129,115**	**11,291**	**43,829**	**21,374**	**39,629**	**50,372**	**295,610**
		Row %	**43.7**	**3.8**	**14.8**	**7.2**	**13.4**	**17.0**	**100.0**

** Primary Industry refers to the industry where individuals earn the largest share of their wages.*

labor market as a whole. The Services industry is more dependent upon a larger labor supply than the market as a whole and therefore, is defined as less efficient than the market as a whole. With the population, containing the supply of labor, estimated to have decreased between 1998 and 1999 (down from 480,045 to 479,602 — see Appendix D), continued growth in Services is likely to be constrained unless it utilizes human capital more efficiently.

The efficiency with which an industry utilizes labor can also be measured in terms of the extent to which employment opportunities represent work over all four quarters of the year. Table 2-2 (see page 32) shows employee utilization by industry. By summing the number of quarters worked by all employees in a given industry, and computing the ratio of this sum to the total quarters of work possible (if each wage earner in the industry had worked all four quarters), we formulated a measure of industry utilization, or the Utilization Index. Quarterly employment reported by employers (under Unemployment Insurance) does not include the actual hours of work for each employee, or whether the employee had a full- or part-time status. The Utilization Index offers an alternative to knowledge of work hours in order to measure the degree to which employers use the human resources available to them.

Coal mining, for example, represents an industry with a high (90.2%) employee utilization rate. In comparison, within Services, hotels and other lodging places (60.9%) and educational services (82.4%) use lower proportions of their respective workforces. This lower utilization may be explained by a more seasonal pattern of labor demand within the lodging and educational services industries than in coal mining.

The interaction between supply and demand measures implies a correlation between measures of labor attachment and industry utilization. For example, Table 2-1 (see page 30) also shows that 63.6 percent of workers in coal mining fell into the Steady Worker Single Employer category. This helps account for the high utilization rate reported for coal mining. Within Services, hotels and other lodging places (25.0%) and educational services (42.1%) represent industries providing fewer opportunities for steady employment with a single employer. Appendix F provides an opportunity to view employment utilization and labor attachment data together by industry.

The Demographics of Attachment and Utilization

Industries have patterned ways of using labor. The uses of labor are associated with demographics where age serves as a proxy for experience. Also, the level of labor utilization implies a correlation between earnings and utilization rates. For example, Appendix E shows that in 1998 males aged 35-44 years who worked in TCPU earned on average $36,578. These earnings are more than twice (109.9%) Wyoming's average annual wage of $17,429 for all industries. Male earnings are used in this example because males comprised a majority (at least 65.3%) of TCPU's workforce (see Appendix B).[11] The Utilization Index for TCPU also has a high 81.8 percent (see Table 2-2, page 32); meaning 81.8 percent of TCPU employees worked all four quarters. In comparison, male workers aged 35-44 years working in Services earned on average, $26,696; females aged 35-44 years working in Services earned $14,844 (see Appendix Table E). Correspondingly, the Utilization Index for Services (regardless of gender) was 70.5 percent (see Table 2-2, page 32), much lower than in TCPU. Within Services, only health services (82.0%) and legal services (82.5%) had utilization rates comparable to TCPU. Business services, which includes information technology-related companies, had a utilization rate of 63.9 percent.

Worker gender, worker attachment, and industry utilization are not the only factors associated with the continued availability of labor. Table 2-3 (see page 33) shows the relationship of age to working in all four quarters in 1998. The highest proportion (74.7%) of any age group working all four quarters in 1998 occurred among 45-54 year-olds. This is also the age group for which both men and women earned the highest average wages, $28,532 (see Table 1-3, page 23). By comparison, only 68.5 percent of 55-64 year-olds worked all four quarters.

Table 2-2: Wage Records Utilization Index by Industry, 1998

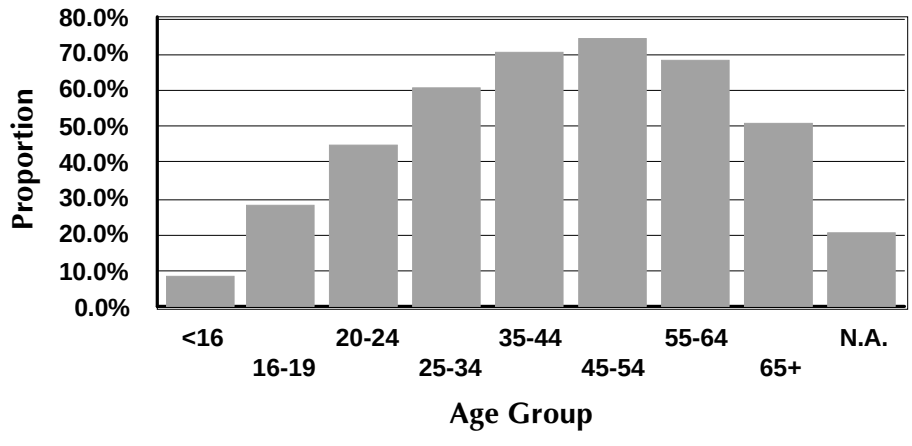
Primary Industry*	Industry	Individuals	Sum of Quarters Worked	Total Quarters Possible	Utilization Index
Agriculture	**Total**	**5,382**	**14,577**	**21,528**	**67.7%**
Mining	Metal Mining	912	3,081	3,648	84.5%
	Coal Mining	5,323	19,209	21,292	90.2%
	Oil & Gas Extraction	11,759	37,285	47,036	79.3%
	Nonmetallic Minerals Mining	3,397	12,379	13,588	91.1%
	Total	**21,391**	**71,954**	**85,564**	**84.1%**
Construction	General Building Contractors	6,786	18,414	27,144	67.8%
	Heavy Construction	9,509	24,323	38,036	63.9%
	Special Trade Construction	12,548	34,409	50,192	68.6%
	Total	**28,843**	**77,146**	**115,372**	**66.9%**
Manufacturing	Durable Goods	6,823	21,950	27,292	80.4%
	Nondurable Goods	8,452	28,149	33,808	83.3%
	Total	**15,275**	**50,099**	**61,100**	**82.0%**
Transportation, Communications, & Public Utilities (TCPU)	Transportation	7,938	24,691	31,752	77.8%
	Communications & Public Utilities	5,867	20,478	23,468	87.3%
	Total	**13,805**	**45,169**	**55,220**	**81.8%**
Wholesale Trade	Durable Goods	5,239	17,717	20,956	84.5%
	Nondurable Goods	4,219	13,552	16,876	80.3%
	Total	**9,458**	**31,269**	**37,832**	**82.7%**
Retail Trade	Building Materials & Garden Supplies	2,726	8,520	10,904	78.1%
	General Merchandise Stores	6,960	19,506	27,840	70.1%
	Food Stores	7,645	23,400	30,580	76.5%
	Auto Dealers & Service Stations	11,219	34,506	44,876	76.9%
	Apparels & Accessory Stores	2,068	5,777	8,272	69.8%
	Furniture & Home Furnishing Stores	1,994	6,029	7,976	75.6%
	Eating & Drinking Places	25,093	66,638	100,372	66.4%
	Miscellaneous Retail	6,582	19,272	26,328	73.2%
	Total	**64,287**	**183,648**	**257,148**	**71.4%**
Finance, Insurance & Real Estate (FIRE)	Finance	5,123	17,775	20,492	86.7%
	Insurance	2,924	10,126	11,696	86.6%
	Real Estate	2,458	7,197	9,832	73.2%
	Total	**10,505**	**35,098**	**42,020**	**83.5%**
Services	Hotels & Other Lodging Places	17,152	41,757	68,608	60.9%
	Personal Services	2,559	7,547	10,236	73.7%
	Business Services	10,948	27,993	43,792	63.9%
	Auto Repair, Services, Parking	2,643	7,917	10,572	74.9%
	Miscellaneous Repair Services	1,106	3,516	4,424	79.5%
	Motion Pictures	918	2,570	3,672	70.0%
	Amusement & Recreation Services	4,340	10,660	17,360	61.4%
	Health Services	12,245	40,153	48,980	82.0%
	Legal Services	1,528	5,034	6,112	82.4%
	Educational Services	1,323	3,434	5,292	64.9%
	Social Services	7,006	21,811	28,024	77.8%
	Museums, Botanical Gardens	377	1,149	1,508	76.2%
	Membership Organizations	2,696	7,771	10,784	72.1%
	Engineering & Management Services	4,601	14,385	18,404	78.2%
	Private Households	780	2,314	3,120	74.2%
	Services, Not Elsewhere Classified	153	447	612	73.0%
	Total	**70,375**	**198,458**	**281,500**	**70.5%**
Government	Federal Govt. Public Administration	248	674	992	67.9%
	Federal Govt. Other	643	1,753	2,572	68.2%
	State Govt. Public Administration	6,699	24,880	26,796	92.8%
	State Govt. Other	6,305	22,093	25,220	87.6%
	Local Govt. Public Administration	10,601	34,492	42,404	81.3%
	Local Govt. Other	31,630	106,480	126,520	84.2%
	Total	**56,126**	**190,372**	**224,504**	**84.8%**
Not Available	**Total**	**163**	**273**	**652**	**41.9%**
Total	**Total**	**295,610**	**898,063**	**1,182,440**	**75.9%**

** Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table 2-3: Individual Utilization by Age Group, 1998

Age Group		Individual Utilization Low	Med-Low	Med-High	High	Total
<16	Count	495	447	210	109	1,261
	% within Age Group	39.3%	35.4%	16.7%	8.6%	100.0%
	% within Utilization	1.0%	1.0%	0.5%	0.1%	0.4%
16-19	Count	3,160	4,930	4,525	5,036	17,651
	% within Age Group	17.9%	27.9%	25.6%	28.5%	100.0%
	% within Utilization	6.2%	11.3%	10.4%	3.2%	6.0%
20-24	Count	3,834	5,700	5,972	12,726	28,232
	% within Age Group	13.6%	20.2%	21.2%	45.1%	100.0%
	% within Utilization	7.5%	13.1%	13.7%	8.1%	9.6%
25-34	Count	5,290	6,205	7,463	29,561	48,519
	% within Age Group	10.9%	12.8%	15.4%	60.9%	100.0%
	% within Utilization	10.3%	14.2%	17.1%	18.8%	16.4%
35-44	Count	4,690	5,373	7,782	43,281	61,126
	% within Age Group	7.7%	8.8%	12.7%	70.8%	100.0%
	% within Utilization	9.2%	12.3%	17.9%	27.5%	20.7%
45-54	Count	3,136	3,443	5,542	35,774	47,895
	% within Age Group	6.5%	7.2%	11.6%	74.7%	100.0%
	% within Utilization	6.1%	7.9%	12.7%	22.8%	16.2%
55-64	Count	1,955	1,911	2,776	14,445	21,087
	% within Age Group	9.3%	9.1%	13.2%	68.5%	100.0%
	% within Utilization	3.8%	4.4%	6.4%	9.2%	7.1%
65+	Count	1,151	818	1,087	3,177	6,233
	% within Age Group	18.5%	13.1%	17.4%	51.0%	100.0%
	% within Utilization	2.3%	1.9%	2.5%	2.0%	2.1%
Not Available	Count	27,441	14,847	8,216	13,102	63,606
	% within Age Group	43.1%	23.3%	12.9%	20.6%	100.0%
	% within Utilization	53.6%	34.0%	18.9%	8.3%	21.5%
Total	**Count**	**51,152**	**43,674**	**43,573**	**157,211**	**295,610**
	% within Age Group	**17.3%**	**14.8%**	**14.7%**	**53.2%**	**100.0%**
	% within Utilization	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Figure 2-2: Proportion of Individuals within Age Group Working All Four Quarters, 1998



The proportion of workers with high utilization (in Table 2-3, page 33) by age group are illustrated in Figure 2-2 (see page 32). Over the forecast horizon (1998 to 2008), 61,126 persons aged 35-44 (with a high utilization rate of 70.8%) will be maturing into the age group (45-54) of highest utilization (74.7%) and enhancing the supply of labor. At the same time, those presently aged 45 to 54 will be maturing into an age group with lower levels of high utilization (68.5% – see Figure 2-2, page 33). Given the higher population level of the 35-44 year old workforce, it appears that the net change results in an overall higher level of labor utilization.

Retirement: Permanent Employee Exits from the Labor Market

The concept of attachment refers to the dominant, patterned involvement of workers in the labor market. One standard pattern of market interaction is retirement. Table 2-3 (see page 33) indicates that 2.1 percent of the workforce is 65 years of age and over and that for 21.5 percent of the population age information is unavailable. By prorating the number of persons for whom age information is unavailable to the age categories for which age information is available (78.5% of the workforce), we can estimate the proportion of the workforce reaching the traditional retirement age of 65, over the forecast period of 1998 to 2008.

In Table 2-4 (see page 35) we present an estimate of the number of persons likely to create a permanent vacancy in the labor market due largely to retirement in Wyoming. An estimated 9.1 percent of the workforce will reach age 65 during the period 1998 to 2008 creating an annual replacement demand of 2,687 persons if all aspects of the labor market were to remain unchanged in the level of demand.

The male dominated, high wage, high utilization, steady work industry of Transportation, Communications, and Public Utilities (TCPU) is expected to experience a replacement need of 11.9 percent during the forecast period. However, some of the highest rates of replacement need are found in all levels of government (12.5%), in coal mining (12.2%), nonmetallic minerals mining (11.6%), real estate (12.4%), and in heavy construction (9.8%). While individual firms may be cognizant of their growing needs as a function of the share of employment reaching traditional retirement age, it is not clear that they understand that growing retirements are something common to firms of selected industries. To the extent that replacement need is industry wide, it is not clear to what extent firms losing employees to retirement will be able to recruit from a less mature workforce in the same industry.

Employee Turnover

Retirement, as used in Table 2-4 (see page 35), means a permanent withdrawal from the labor market. Persons retiring from the market would represent a small share of the persons exiting the labor market as discussed in relationship to the remaining three tables in this chapter.

Determining "the effectiveness of the labor market," and identifying the "percentage of job openings (that) are filled through the workforce activities/services such as the One-Stop Centers" implies a knowledge of how the market in its entirety functions. With some limitations, comprehensive market functioning can be specified and the level of filled vacancies computed.

As we indicated in Table 2-1 (see page 29), steady work with the same employer (only 43.7% of the workforce) does not characterize the experience of most workers in Wyoming. Most people who work in Wyoming, or most employers, attain a job, leave a job, hire someone, or let someone go during the course of a year. In 1998, 57.7 percent of the 294,166 persons who worked entered employment during the year (see Table 2-5, page 36). The vast majority (70.0%) of those who worked at any time during the year were hired, left employment with an employer, or engaged in both activities.

Most employers, 84.3 percent of the total, hired at least one person during 1998 (see Table 2-6, page 36). The data in Tables 2-5 and 2-6 describe the number of workers and employers in the market during each

Table 2-4: Individuals in Wyoming Reaching Age 65 During the Period 1998-2008 by Industry

Primary Industry*	Industry	Number of Expected Retirements	Percent of Current Employment	Expected Retirements per Year
Agriculture	**Total**	**430**	**8.0%**	**43**
Mining	Metal Mining	78	8.5%	8
	Coal Mining	651	12.2%	65
	Oil & Gas Extraction	845	7.2%	85
	Nonmetallic Minerals Mining	396	11.6%	40
	Total	**1,987**	**9.3%**	**199**
Construction	General Building Contractors	372	5.5%	37
	Heavy Construction	927	9.8%	93
	Special Trade Construction	795	6.3%	80
	Total	**2,078**	**7.2%**	**208**
Manufacturing	Durable Goods	524	7.7%	52
	Nondurable Goods	919	10.9%	92
	Total	**1,442**	**9.4%**	**144**
Transportation, Communications, & Public Utilities (TCPU)	Transportation	979	12.3%	98
	Communications & Public Utilities	668	11.4%	67
	Total	**1,645**	**11.9%**	**165**
Wholesale Trade	Durable Goods	443	8.5%	44
	Nondurable Goods	405	9.6%	41
	Total	**848**	**9.0%**	**85**
Retail Trade	Building Materials & Garden Supplies	216	7.9%	22
	General Merchandise Stores	607	8.7%	61
	Food Stores	510	6.7%	51
	Auto Dealers & Service Stations	832	7.4%	83
	Apparel & Accessory Stores	135	6.5%	14
	Furniture & Home Furnishing Stores	128	6.4%	13
	Eating & Drinking Places	908	3.6%	91
	Miscellaneous Retail	611	9.3%	61
	Total	**4,005**	**6.2%**	**401**
Finance, Insurance & Real Estate (FIRE)	Finance	475	9.3%	48
	Insurance	269	9.2%	27
	Real Estate	306	12.4%	31
	Total	**1,043**	**9.9%**	**104**
Services	Hotels & Other Lodging Places	1,402	8.2%	140
	Personal Services	232	9.1%	23
	Business Services	789	7.2%	79
	Auto Repair, Services, Parking	187	7.1%	19
	Miscellaneous Repair Services	101	9.2%	10
	Motion Pictures	20	2.2%	2
	Amusement & Recreation Services	309	7.1%	31
	Health Services	1,102	9.0%	110
	Legal Services	102	6.7%	10
	Educational Services	110	8.3%	11
	Social Services	595	8.5%	59
	Museums, Botanical Gardens	66	17.6%	7
	Membership Organizations	291	10.8%	29
	Engineering & Management Services	393	8.5%	39
	Private Households	132	16.9%	13
	Services, Not Elsewhere Classified	14	9.4%	1
	Total	**5,887**	**8.4%**	**589**
Government	Federal Govt. Public Administration	2	0.8%	0
	Federal Govt. Other	67	10.4%	7
	State Govt. Public Administration	886	13.2%	89
	State Govt. Other	751	11.9%	75
	Local Govt. Public Administration	1,140	10.8%	114
	Local Govt. Other	4,161	13.2%	416
	Total	**7,009**	**12.5%**	**701**
Not Available	**Total**	**13**	**7.7%**	**1**
Total	**Total**	**26,868**	**9.1%**	**2,687**

** Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table 2-5: Individuals by Quarterly Employment Turnover Activity, 1998

	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		1998 Total	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Total SSN's with Any Turnover Activity	58,988	28.5%	92,106	39.9%	95,006	40.3%	84,137	38.7%	206,040	70.0%
Total SSN's Entering Employment with at Least One Employer	39,520	19.1%	69,561	30.1%	60,448	25.6%	50,147	23.1%	169,853	57.7%
Total SSN's Exiting Employment from at Least One Employer	39,519	19.1%	55,771	24.2%	72,358	30.7%	65,637	30.2%	179,915	61.2%
Total SSN's with at Least One Employer	**207,107**		**230,880**		**235,795**		**217,381**		**294,166**	**100.0%**

Note: Table is a count of the unduplicated SSNs involved in the designated activity. For example, an individual in this table that enters employment with seven employers would only be counted as one SSN in that quarter.

Table 2-6: Firms by Quarterly Employment Turnover Activity, 1998

	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		1998 Total	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Total Employers with Any Turnover Activity	10,216	66.8%	11,879	73.7%	11,941	74.0%	11,297	72.4%	16,213	90.6%
Total Employers with at Least One Employee Entering Employment	8,408	55.0%	10,988	68.2%	9,944	61.6%	8,693	55.7%	15,095	84.3%
Total Employers with at Least One Employee Exiting Employment	8,344	54.5%	9,603	59.6%	10,400	64.4%	10,023	64.3%	15,233	85.1%
Total Employers with at Least One Employee	**15,300**		**16,114**		**16,146**		**15,599**		**17,900**	**100.0%**

Note: Table is a count of the unduplicated firms involved in the designated activity. For example, a firm in this table that hires 1,000 employees would only be counted as one employer in that quarter.

Table 2-7: Quarterly Average Employment, Hires, Exits, and Turnover Rate by Industry, 1998

	Primary Industry*	Industry	First Quarter				Second Quarter				Third Quarter				Fourth Quarter			
			Avg Monthly Employment	Hires	Exits	Turnover Rate	Avg Monthly Employment	Hires	Exits	Turnover Rate	Avg Monthly Employment	Hires	Exits	Turnover Rate	Avg Monthly Employment	Hires	Exits	Turnov Ra
Goods Producing	**Agriculture**	**Industry Total**	**2,464**	**643**	**522**	**21.2%**	**3,511**	**2,240**	**1,387**	**39.5%**	**3,613**	**1,228**	**1,617**	**44.8%**	**2,909**	**802**	**1,554**	**53.4**
	Mining	Metal Mining	679	112	82	12.1%	714	156	102	14.3%	692	149	205	29.6%	666	51	101	15.2
		Coal Mining	4,068	481	287	7.1%	4,510	1,021	899	19.9%	4,534	261	451	9.9%	4,455	397	447	10.0
		Oil & Gas Extraction	8,632	2,524	2,551	29.6%	8,371	2,026	2,125	25.4%	8,644	2,307	2,445	28.3%	8,097	1,856	3,283	40.5
		Nonmetallic Minerals Mining	2,998	147	213	7.1%	2,990	248	204	6.8%	2,530	180	267	10.6%	2,434	124	625	25.7
		Industry Total	**16,377**	**3,264**	**3,133**	**19.1%**	**16,584**	**3,451**	**3,330**	**20.1%**	**16,400**	**2,897**	**3,368**	**20.5%**	**15,653**	**2,428**	**4,456**	**28.5**
	Construction	General Building Contractors	3,357	1,134	1,300	38.7%	3,888	2,323	1,714	44.1%	4,160	2,044	2,138	51.4%	3,829	1,571	2,172	56.7
		Heavy Construction	3,155	1,250	1,207	38.3%	4,762	4,149	2,799	58.8%	4,812	2,896	2,922	60.7%	4,118	1,657	2,899	70.4
		Special Trade Construction	6,364	2,235	2,292	36.0%	7,519	4,515	3,368	44.8%	7,876	3,513	3,645	46.3%	7,457	2,830	4,009	53.8
		Industry Total	**12,876**	**4,619**	**4,799**	**37.3%**	**16,170**	**10,987**	**7,881**	**48.7%**	**16,849**	**8,453**	**8,705**	**51.7%**	**15,404**	**6,058**	**9,080**	**58.9**
	Manufacturing	Durable Goods	4,746	813	872	18.4%	4,891	1,366	1,016	20.8%	4,953	1,188	1,342	27.1%	4,853	928	1,277	26.3
		Nondurable Goods	6,531	635	818	12.5%	6,622	1,352	927	14.0%	6,577	1,184	1,250	19.0%	6,702	1,331	1,587	23.7
		Industry Total	**11,278**	**1,448**	**1,690**	**15.0%**	**11,512**	**2,718**	**1,943**	**16.9%**	**11,530**	**2,372**	**2,592**	**22.5%**	**11,555**	**2,259**	**2,864**	**24.8**
	Sector Total		**42,995**	**9,974**	**10,144**	**23.6%**	**47,776**	**19,396**	**14,541**	**30.4%**	**48,392**	**14,950**	**16,282**	**33.6%**	**45,521**	**11,547**	**17,954**	**39.4**
Services Producing	**Transportation, Communications, & Public Utilities (TCPU)**	Transportation	5,632	1,170	1,238	22.0%	5,776	1,673	1,485	25.7%	5,906	1,508	1,557	26.4%	5,855	1,527	1,978	33.8
		Communications & Public Utilities	5,005	421	361	7.2%	4,972	852	511	10.3%	4,972	487	476	9.6%	4,989	438	701	14.1
		Industry Total	**10,637**	**1,591**	**1,599**	**15.0%**	**10,748**	**2,525**	**1,996**	**18.6%**	**10,878**	**1,995**	**2,033**	**18.7%**	**10,844**	**1,965**	**2,679**	**24.7**
	Wholesale Trade	Durable Goods	4,152	657	561	13.5%	4,293	737	621	14.5%	3,826	720	794	20.8%	3,764	914	1,199	31.9
		Nondurable Goods	3,182	582	610	19.2%	3,212	745	732	22.8%	3,168	709	784	24.8%	3,199	1,756	2,020	63.2
		Industry Total	**7,334**	**1,239**	**1,171**	**16.0%**	**7,505**	**1,482**	**1,353**	**18.0%**	**6,993**	**1,429**	**1,578**	**22.6%**	**6,962**	**2,670**	**3,219**	**46.2**
	Retail Trade	Building Materials & Garden Supplies	1,760	359	365	20.7%	2,017	755	512	25.4%	2,043	538	612	30.0%	1,910	386	529	27.7
		General Merchandise Stores	4,545	409	791	17.4%	4,947	2,584	1,412	28.5%	4,211	1,272	1,741	41.3%	4,005	1,193	1,180	29.5
		Food Stores	4,922	912	985	20.0%	5,076	1,676	1,466	28.9%	5,087	1,629	1,706	33.5%	5,553	2,080	3,562	64.1
		Auto Dealers & Service Stations	7,710	1,862	1,748	22.7%	8,097	2,762	2,380	29.4%	8,221	2,640	2,709	33.0%	7,938	2,113	3,240	40.8
		Apparel & Accessory Stores	1,266	409	445	35.1%	1,446	812	633	43.8%	1,347	551	617	45.8%	1,306	489	524	40.1
		Furniture & Home Furnishings	1,418	338	345	24.3%	1,417	431	426	30.1%	1,401	405	409	29.2%	1,481	475	463	31.3
		Eating & Drinking Places	14,732	5,351	5,302	36.0%	16,065	9,128	7,633	47.5%	16,681	8,470	9,301	55.8%	14,915	6,421	8,107	54.4
		Miscellaneous Retail	4,502	1,117	1,284	28.5%	4,768	1,873	1,568	32.9%	4,742	1,677	1,773	37.4%	4,617	1,412	1,769	38.3
		Industry Total	**40,856**	**10,757**	**11,265**	**27.6%**	**43,833**	**20,021**	**16,030**	**36.6%**	**43,734**	**17,182**	**18,868**	**43.1%**	**41,725**	**14,569**	**19,374**	**46.4**
	Finance, Insurance & Real Estate (FIRE)	Finance	4,154	557	439	10.6%	4,270	676	534	12.5%	4,275	569	639	14.9%	4,264	481	687	16.1
		Insurance	2,387	333	232	9.7%	2,419	320	302	12.5%	2,455	396	377	15.4%	2,445	290	348	14.2
		Real Estate	1,688	454	377	22.3%	1,815	691	496	27.3%	1,875	578	710	37.9%	1,717	505	588	34.2
		Industry Total	**8,229**	**1,344**	**1,048**	**12.7%**	**8,504**	**1,687**	**1,332**	**15.7%**	**8,604**	**1,543**	**1,726**	**20.1%**	**8,427**	**1,276**	**1,623**	**19.3**
	Services	Hotels & Other Lodging Places	6,301	2,157	2,239	35.5%	8,946	8,556	3,794	42.4%	11,722	6,113	8,065	68.8%	6,969	2,458	5,070	72.8
		Personal Services	1,909	576	468	24.5%	1,842	632	677	36.8%	1,783	558	545	30.6%	1,828	549	609	33.3
		Business Services	5,373	2,965	2,901	54.0%	6,316	4,536	3,462	54.8%	6,653	4,843	4,892	73.5%	6,504	3,570	4,508	69.3
		Auto Repair, Services & Parking	1,838	462	464	25.2%	1,878	625	573	30.5%	1,943	644	611	31.4%	1,926	524	655	34.0
		Miscellaneous Repair Services	830	171	176	21.2%	850	225	215	25.3%	815	220	230	28.2%	792	150	236	29.8
		Motion Pictures	725	217	226	31.2%	717	222	220	30.7%	722	287	312	43.2%	694	253	269	38.8
		Amusement & Recreation Services	2,550	786	794	31.1%	2,437	1,784	1,449	59.5%	2,930	1,378	1,874	64.0%	2,279	1,744	1,644	72.1
		Health Services	9,926	1,517	1,564	15.8%	9,993	1,931	2,298	23.0%	9,665	1,910	1,971	20.4%	9,693	1,997	2,594	26.8
		Legal Services	1,187	193	157	13.2%	1,244	232	200	16.1%	1,225	200	217	17.7%	1,242	189	272	21.9
		Educational Services	721	159	162	22.5%	721	265	219	30.4%	768	469	410	53.4%	728	266	352	48.3
		Social Services	5,084	921	847	16.7%	5,181	1,520	1,492	28.8%	5,147	1,418	1,403	27.3%	5,435	1,414	1,490	27.4
		Museums & Botanical Gardens	198	29	56	28.3%	280	166	36	12.9%	330	74	139	42.1%	234	24	86	36.7
		Membership Orginizations	1,866	370	389	20.8%	2,094	827	550	26.3%	2,167	721	996	46.0%	2,082	585	611	29.4
		Engineering & Management Services	3,338	764	596	17.9%	3,409	927	872	25.6%	3,486	808	828	23.8%	3,435	791	976	28.4
		Private Households	532	118	109	20.5%	582	195	134	23.0%	590	141	202	34.3%	520	125	166	31.9
		Services, Not Elsewhere Classified	96	16	23	24.0%	106	32	20	18.9%	106	22	15	14.2%	115	35	36	31.3
		Industry Total	**42,475**	**11,421**	**11,171**	**26.3%**	**46,596**	**22,675**	**16,211**	**34.8%**	**50,053**	**19,806**	**22,710**	**45.4%**	**44,475**	**14,674**	**19,574**	**44.0**
	Government	State Govt. Public Administration	6,034	328	288	4.8%	6,161	520	437	7.1%	6,170	418	523	8.5%	6,029	319	375	6.2
		State Govt. Other	5,446	363	293	5.4%	5,471	990	567	10.4%	5,492	619	1,059	19.3%	5,386	328	399	7.4
		Local Govt. Public Administration	8,242	984	976	11.8%	8,930	2,447	1,384	15.5%	9,290	2,112	2,966	31.9%	8,274	1,111	1,704	20.6
		Local Govt. Other	26,955	3,096	2,751	10.2%	26,674	3,703	6,360	23.8%	20,229	3,592	3,207	15.9%	26,460	5,333	3,876	14.6
		Industry Total	**46,676**	**4,771**	**4,308**	**9.2%**	**47,236**	**7,660**	**8,748**	**18.5%**	**41,181**	**6,741**	**7,755**	**18.8%**	**46,149**	**7,091**	**6,354**	**13.8**
	Sector Total		**156,206**	**31,123**	**30,562**	**19.6%**	**164,421**	**56,050**	**45,670**	**27.8%**	**161,443**	**48,696**	**54,670**	**33.9%**	**158,582**	**42,245**	**52,823**	**33.3**
	Total All Industries		**199,201**	**41,097**	**40,706**	**20.4%**	**212,198**	**75,446**	**60,211**	**28.4%**	**209,835**	**63,646**	**70,952**	**33.8%**	**204,103**	**53,792**	**70,777**	**34.7**

** Primary Industry refers to the industry where individuals earn the largest share of their wages.*

quarter of 1998. Table 2-7 (see page 37) describes the volume of market hire and exit transactions between most workers and employers in Wyoming.

In 1998, 206,040 persons and 16,213 employers, were responsible for 233,981 hiring transactions and 242,646 exit transactions. As we can see in Table 2-7 (see page 37), the peak period of hire (n=75,446) occurred during the second quarter. The peak periods of exit were in the third (n=70,952) and fourth quarters (n=70,777). Turnover rates were computed as a function of exit transactions divided into the number of jobs worked as of the 12th of the month for all employers reporting complete employment (jobs) and Wage Records (all persons who worked) information for Unemployment Insurance purposes. A conventional computation of the turnover rate for 1998 is to divide average employment (N=206,334) into the number of exit transactions (N=242,646) for a rate of 117.6 percent.

Exit (turnover) rates are at their lowest point in the first quarter at 20.4 percent, and rise to 34.7 percent in the fourth quarter (when non-market transactions in the Unemployment Insurance program begin to accelerate). In terms of volume, certain periods of the year are dominated by different industries. The majority (56.6%) of hiring during the peak period of the second quarter was divided between 22,675 hiring transactions in Services and 20,021 in Retail Trade.

Overall, exit rates are lower in high utilization industries and higher in low utilization industries. For example, the Utilization Index in Mining (see Table 2-2, page 32), at 84.1 percent, corresponds to a low turnover rate of 87.9 percent (see Table 2-7, page 37). However, the Index for Services stands at 70.5 percent, with a correspondingly high 151.8 percent turnover rate. As the Workforce Development Council's minutes, used to introduce this chapter, reflect, to the extent that "job openings are filled through ... workforce activities ... such as the One-Stop Centers . . . " there may be increased pressures for One-Stop services if the Services Producing sector continues to expand as anticipated.

Given the lower levels of utilization, worker attachment, worker earnings, and higher turnover rates for Services Producing industries, it is not clear that the workforce benefits as extensively from non-selective One-Stop services driven by the volume of transactions generated by Services. R&P has not received the files necessary to identify the market share of all transactions that have contact with the One-Stops, partner agencies, and intermediaries in the market.

Conclusions

As the available data indicate, the majority of employers and workers engage in hiring and exit activity over the course of a year. Labor interactions are of a very fluid nature, but barring geographic and seasonal differences between the demand and supply for labor, Wyoming has sufficient human resources. This untapped source of labor in Wyoming is what might be termed our "under-utilized work force." What is unclear, however, is whether the available labor is sufficient to meet the current occupational demands.

Clearly, the industries representing the bulk of under-utilized labor include Construction, Retail Trade, and Services. We know something of the demographic profile of under-utilized workers in these industries. In Retail Trade and Services, they are females, aged 20-44. Construction employs a high proportion of under-utilized male workers aged 20-34 years. Workers in these age groups offer a source of labor that could be more fully utilized.

A policy implication for workforce development is that by improving the utilization rate of human resources in Services, Retail Trade, Construction, or other growing industries to a level equivalent to TCPU (81.8%), Wyoming's current supply of labor may be able to meet the demand for labor and more fully tap the workers' potential. Innovations such as developing telework arrangements for Services employees or training opportunities for Construction or Retail Trade workers may help eliminate geographical or seasonal barriers to improving levels of employee utilization.

Chapter 3
Fastest Growing Occupations: Projected Demand

> *"Making Wyoming competitive [requires] … focus[ing] on specific high-demand occupations and develop[ing] incentives to attract or retain workers."* – Wyoming Workforce Development Council Minutes, June 6, 2000

We have now discussed how turnover, industrial structure, labor utilization, and demographics impact the demand for labor. Many of these activities occur beneath the surface of traditional labor market measures. But, as we have seen, all of these factors influence the demand for labor in ways we are only beginning to understand. Yet, as importantly, industries continue to expand and contract. This chapter introduces occupational projections and explains what they contribute to our understanding of the labor market.

Occupational demand occurs because employment on the whole rises (net change), individuals occupying jobs leave the labor market for reasons of retirement (creating replacement need), or people may leave labor markets in Wyoming for economic reasons. In this chapter, we intend to describe how the structure of occupational demand is changing in Wyoming and the U.S., and provide background on the competition for selected occupations. Chapters 5 and 6 discuss two factors (wages and opportunities) that influence an individual's choice to stay in or leave Wyoming. These two factors are likely to have the greatest impact on maintaining competition and recruitment of a skilled/educated labor force to fill vacancies in certain occupations.

Definitions: Net Employment Change and Percent Employment Change

At this point, it is necessary to introduce two measures of occupational growth based on the Occupational Employment Statistics (OES) classification system. The first, ***net employment change***, is defined as the projected occupational employment level in 2008 minus the occupational employment level in the base year or 1998. For example, cashiers (see Table 3-1, page 40) show a net growth of 816 (6,550 minus 5,734) jobs over the next decade. The second measure, ***percent employment change,*** is defined as the projected employment level in 2008 minus the base employment level (in 1998) divided by the employment level in 1998 ((6,550 – 5,734)/5,734). The percent employment change for cashiers over the forecast period is 14.2 percent.

At first glance, both measures of employment growth appear to tell us the same thing. The difference is that ***net employment change*** is appropriate for measuring the changing structure of Wyoming's workforce requirements, while ***percent employment change*** is useful for identifying new and emerging occupations. An emerging occupation is characterized as new occupation created by changes in technology, society, markets, or regulations.[12] For example, as computers become more powerful, the opportunity to exploit large quantities of data creates a greater need to manage and analyze these databases.

Fastest Growing Occupations for Wyoming and U.S. by Net Employment and Percent Employment Change

Tables 3-1 (see page 40) to 3-4 (see page 42) show the results for Wyoming and the U.S.'s Top 30 projected occupations by net and percent growth. Table 3-8, page A-2, in the appendix of this text, is the detailed list of all 672 occupations that occur in Wyoming with the net and percent employment change over the next decade.

Table 3-1: Wyoming's 30 Fastest Net Employment Growth Occupations, 1998-2008

OES* Code	Occupational Title	Base Year 1998	Projected Year 2008	Net Growth	Typical Education/Experience Leve
49011	Salespersons, Retail	6,400	7,852	1,452	Short-term on-the-job training
32502	Registered Nurses	3,419	4,314	895	Associate's degree
49023	Cashiers	5,734	6,550	816	Short-term on-the-job training
31308	Teachers, Secondary School	3,908	4,508	600	Bachelor's degree
65038	Food Preparation Workers	3,344	3,852	508	Short-term on-the-job training
19005	General Managers and Top Executives	6,100	6,568	468	Work exp., plus a bachelor's or higl
87102	Carpenters	1,927	2,357	430	***Moderate-term on-the-job traini
85132	Maintenance Repairers, General Utility	3,409	3,786	377	Long-term on-the-job training
65026	Cooks, Restaurant	2,325	2,697	372	Long-term on-the-job training
87202	Electricians	1,316	1,628	312	Long-term on-the-job training
67005	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	4,100	4,402	302	***Short-term on-the-job training
13002	Financial Managers	1,551	1,828	277	Work exp., plus a bachelor's or higl
41002	First-Line Supervisors and Managers - Sales and Related Workers	3,056	3,312	256	Work experience in related occupa
98999	All Other Helpers, Laborers, and Material Movers, Hand	2,428	2,681	253	***Short-term on-the-job training
81005	First-Line Supervisors and Managers - Construction and Extractive	1,526	1,763	237	***Work experience in related occ
65041	Combined Food Preparation and Service Workers	2,641	2,862	221	***Short-term on-the-job training
65008	Waiters and Waitresses	5,520	5,739	219	Short-term on-the-job training
15026	Food Service and Lodging Managers	978	1,182	204	Work experience in related occupa
97105	Truck Drivers, Light, Include Delivery and Route Workers	2,104	2,294	190	***Short-term on-the-job training
49021	Stock Clerks, Sales Floor	2,202	2,389	187	***Short-term on-the-job training
87311	Concrete and Terrazzo Finishers	495	661	166	Long-term on-the-job training
27307	Residential Counselors	585	750	165	Bachelor's degree
87502	Plumbers, Pipefitters, and Steamfitters	725	888	163	Long-term on-the-job training
87917	Service Unit Operators	1,043	1,204	161	***Short-term on-the-job training
32505	Licensed Practical Nurses	900	1,060	160	Post secondary vocational training
85302	Automotive Mechanics	1,326	1,485	159	Post secondary vocational training
49999	All Other Sales and Related Workers	1,229	1,388	159	***Short-term on-the-job training
92935	Chemical Equipment Controllers and Operators	392	542	150	***Moderate-term on-the-job traini
68038	Child Care Workers	759	904	145	Short-term on-the-job training
15017	Construction Managers	622	764	142	Bachelor's degree

** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*

*** Source: Bureau of Labor Statistics Internet Site, http://stats.bls.gov/asp/oep/noeted/empnumb.asp (August 15, 2000).*

**** Typical Education/Experience Level was not available for these occupations but inferred based on the most similar occupation for which data was available.*

A review of Tables 3-1 (see page 40) and 3-2 (see page 42) reveals that the greatest net gain in employment will occur among occupations requiring only work experience (On-the-Job-Training) for both Wyoming and the U.S. over the period 1998–2008. Isolating the occupations requiring only work related experience, and comparing Wyoming to the U.S., the largest growth among these occupations in Wyoming will occur in construction related occupations. In the U.S., the bulk of the growth will occur in Services related occupations. Further, comparing occupations requiring, at a minimum, post secondary education, Wyoming's net growth will occur in management and service related occupations, while four of the nine net growth occupations nationally will occur in computer science related occupations.

To more clearly view the projected occupational differences of Wyoming and the U.S., the occupational codes for the 30 projected ***net employment change*** occupations were summed to their major occupational categories (see page 45). The greatest occupational growth for Wyoming will occur in the production, construction, operating, maintenance, and material handling occupations. In contrast, the greatest growth nationally will occur in the professional, paraprofessional, and technical occupations. This difference will create a labor force in Wyoming that requires less education and technical skill than that of the nation.

Comparing the fastest growing occupations by ***percent employment change*** (see Table 3-3, page 43 and Table 3-4, page 44), paints a similar picture. Table 3-6 (see page 45) shows that Wyoming's fastest growing occupations are distributed among three occupational groups, and in the U.S. in five occupational groups. The occupations with the fastest percent employment growth in Wyoming are distributed equally among the three groups, while the United States' fastest percent employment growth are concentrated in the professional, paraprofessional, and technical occupations. Wyoming's occupational projections, therefore, show less diversity.

A closer look at Tables 3-3 and 3-4 shows that Wyoming shares with the nation a demand for four of its eleven emerging professional occupations. Three of the four are computer science related fields. These three occupations are in demand nationally and in states to which the Wyoming population is most likely to migrate, or destination states.[13] Using the National OES Wage data[14] and isolating the three occupations produces Table 3-7 (see page 45), showing that Wyoming's average hourly wage for the three computer science occupations are lower than in all other destination states. For example, at the low end of the difference between Wyoming's and the destination states' average hourly wage, Montana pays 0.3 percent more for systems analyst, electronic data processors than Wyoming ($19.58 compared to $19.53). On the high end, however, Colorado pays 49.6 percent more per hour than Wyoming for the same occupation ($29.21 compared to $19.53).

Changing Occupational Structures of Wyoming and the U.S.

The rest of this chapter, and Chapters 5 and 6, demonstrate that for occupations requiring education beyond high school, Wyoming has a difficult time competing, both in wages and opportunity. While looking at the 30 fastest growing occupations (net and percent) simplifies the changing occupational structure, we gain more insight by looking at the growth (both gain and loss in employment) of all detailed occupations (see Table 3-8, page A-2).

Figure 3-1 (see page 46) was created by using the complete occupational projection files for Wyoming and the U.S. It represents the percent growth over the forecast horizon (1998-2008) for both the state and nation by major occupational group. Total employment is expected to grow in both Wyoming (6.1%) and the U.S. (15.3%). Figure 3-1 shows that the distribution of employment growth differs for these two areas. For example, clerical and administrative support occupations will continue to grow nationally (11.5%), yet decline in Wyoming (-20.5%). Even though professional, paraprofessional, and technical occupations did not show up equally compared to the U.S. in the top 30 percent growth

Table 3-2: The U.S.'s 30 Fastest Net Employment Growth Occupations, 1998-2008

OES* Code	Occupational Title	Base Year 1998	Projected Year 2008	Net Growth	Typical Education/Experie
25102	Systems Analysts	617,000	1,194,000	577,000	Bachelor's degree
49011	Retail Salespersons	4,056,000	4,620,000	563,000	Short-term on-the-jobtraini
49023	Cashiers	3,198,000	3,754,000	556,000	Short-term on-the-jobtraini
19005	General Managers and Top Executives	3,362,000	3,913,000	551,000	Work exp. plus bachelor's
N/A***	Truck Drivers Light and Heavy	2,970,000	3,463,000	493,000	Short-term on-the-jobtraini
55347	Office Clerks, General	3,021,000	3,484,000	463,000	Short-term on-the-jobtraini
32502	Registered Nurses	2,079,000	2,530,000	451,000	Associate's degree
25104	Computer Support Specialists	429,000	869,000	439,000	Associate's degree
68035	Personal Care and Home Health Aides	746,000	1,179,000	433,000	Short-term on-the-jobtraini
31521	Teacher Assistants	1,192,000	1,567,000	375,000	Short-term on-the-jobtraini
N/A***	Janitors and Cleaners, Including Maids and Housekeeping Cleaners	3,184,000	3,549,000	365,000	Short-term on-the-jobtraini
66008	Nursing Aides, Orderlies, and Attendants	1,367,000	1,692,000	325,000	Short-term on-the-jobtraini
22127	Computer Engineers	299,000	622,000	323,000	Bachelor's degree
31308	Teachers, Secondary School	1,426,000	1,749,000	322,000	Bachelor's degree
N/A***	Office and Administrative Support Supervisors and Managers	1,611,000	1,924,000	313,000	Work experience in a relat
55305	Receptionists and Information Clerks	1,293,000	1,599,000	305,000	Short-term on-the-job traini
65008	Waiters and Waitresses	2,019,000	2,322,000	303,000	Short-term on-the-job traini
63047	Guards	1,027,000	1,321,000	294,000	Short-term on-the-job traini
13011	Marketing and Sales Worker Supervisors	2,584,000	2,847,000	263,000	Work experience in a relat
65017	Food Counter, Fountain, and Related Workers	2,025,000	2,272,000	247,000	Short-term on-the-job traini
68038	Child Care Workers	905,000	1,141,000	236,000	Short-term on-the-job traini
79041	Laborers, Landscaping and Groundskeeping	1,130,000	1,364,000	234,000	Short-term on-the-job traini
N/A***	Social Workers	604,000	822,000	218,000	Bachelor's degree
98902	Hand Packers and Packagers	984,000	1,197,000	213,000	Short-term on-the-job traini
31305	Teachers, Elementary School	1,754,000	1,959,000	205,000	Bachelor's degree
N/A***	Blue-Collar Worker Supervisors	2,198,000	2,394,000	196,000	Work experience in a relat
N/A***	College and University Faculty	865,000	1,061,000	195,000	Doctoral degree
25105	Computer Programmers	648,000	839,000	191,000	Bachelor's degree
53123	Adjustment Clerks	479,000	642,000	163,000	Short-term on-the-job traini
63017	Correctional Officers	383,000	532,000	148,000	Long-term on-the-job traini

occupation is given a unique classification code.

*** Source: Bureau of Labor Statistics Internet Site, http://stats.bls.gov/asp/oep/noeted/empnumb.asp (August 15, 2000).*

**** These occupational titles are comprised of more than one occupation, so single OES codes are not available.*

Table 3-3: Wyoming's 30 Fastest Percent Employment Growth Occupations, 1998-2008

OES* Code	Occupational Title	Base Year 1998	Projected Year 2008	Net Growth	Typical Education/Experi
53117	Credit Checkers	112	155	38.4%	Short-term on-the-job trai
53121	Loan and Credit Clerks	283	405	43.1%	Short-term on-the-job trai
53128	Brokerage Clerks	32	44	37.5%	Moderate-term on-the-jol
53302	Insurance Adjusters, Examiners, and Investigators	79	123	55.7%	Long-term on-the-job trai
53311	Insurance Claims Clerks	43	59	37.2%	Moderate-term on-the-jol
53314	Insurance Policy Processing Clerks	320	455	42.2%	Moderate-term on-the-jol
55302	Stenographers and/or Court Reporters	73	99	35.6%	Post secondary vocationa
58011	Transportation Agents	187	263	40.6%	***Short-term on-the-job
87302	Brickmasons	160	224	40.0%	***Long-term on-the-job t
87602	Carpet Installers	112	154	37.5%	Moderate-term on-the-jol
91502	Numerical Control Machine Tool Operators and Tenders, Metal and Plastic	37	58	56.8%	Moderate-term on-the-jol
91905	Plastic Molding and Casting Machine Operators and Tenders	52	78	50.0%	***Moderate-term on-the
91911	Metal Molding, Coremaking, and Casting Machine Operators and Tenders	46	63	37.0%	***Moderate-term on-the
91914	Foundry Mold Assembly and Shake-Out Workers	43	58	34.9%	Moderate-term on-the-jol
92908	Photographic Processing Machine Operators and Tenders	87	131	50.6%	Short-term on-the-job trai
92935	Chemical Equipment Controllers and Operators	392	542	38.3%	***Moderate-term on-the
95008	Chemical Plant and System Operators	233	330	41.6%	Long-term on-the-job trai
97702	Aircraft Pilots and Flight Engineers	209	293	40.2%	Bachelor's degree
98314	Helpers, Painters, Paperhangers, Plasterers, and Stucco Masons	25	34	36.0%	***Short-term on-the-job
21921	Claims Examiners, Property and Casualty Insurance	50	67	34.0%	Bachelor's degree
22127	Computer Engineers	26	35	34.6%	Bachelor's degree
25102	Systems Analysts, Electronic Data Processing	181	310	71.3%	Bachelor's degree
25103	Data Base Administrators	33	57	72.7%	Bachelor's degree
25108	Computer Programmer Aides	167	280	67.7%	***Associate's degree
28302	Law Clerks	83	114	37.4%	***Associate's degree
28308	Title Searchers	22	31	40.9%	***Associate's degree
28311	Title Examiners and Abstractors	39	54	38.5%	***Associate's degree
32302	Respiratory Therapists	143	227	58.7%	Associate's degree
32951	Veterinary Technicians and Technologists	83	123	48.2%	Associate's degree
34035	Artists and Related Workers	93	126	35.5%	Work exp., plus a bachel

occupation is given a unique classification code.

*** Source: Bureau of Labor Statistics Internet Site, http://stats.bls.gov/asp/oep/noeted/empnumb.asp (August 15, 2000).*

**** Typical Education/Experience Level was not available for these occupations but inferred based on the most similar occupation for which data was available.*

JOBS

Table 3-4: The U.S.'s 30 Fastest Percent Employment Growth Occupations, 1998-2008

OES* Code	Occupational Title	Base Year 1998	Projected Year 2008	Net Growth	Typical Education/
22127	Computer Engineers	299,000	622,000	108.0%	Bachelor's degree
25104	Computer Support Specialists	429,000	869,000	102.0%	Associate's degree
25102	Systems Analysts	617,000	1,194,000	94.0%	Bachelor's degree
25103	Database Administrators	87,000	155,000	77.0%	Bachelor's degree
89707	Desktop Publishing Specialists	26,000	44,000	73.0%	Long-term on-the-j
28305	Paralegals and Legal Assistants	136,000	220,000	62.0%	Associate's degree
66005	Medical Assistants	252,000	398,000	58.0%	Moderate-term on-
68035	Personal Care and Home Health Aides	746,000	1,179,000	58.0%	Short-term on-the-j
N/A***	Social and Human Service Assistants	268,000	410,000	53.0%	Moderate-term on-
32511	Physician Assistants	66,000	98,000	48.0%	Bachelor's degree
85705	Data Processing Equipment Repairers	79,000	117,000	47.0%	Postsecondary voc
27307	Residential Counselors	190,000	278,000	46.0%	Bachelor's degree
92902	Electronic Semiconductor Processors	63,000	92,000	45.0%	Moderate-term on-
32911	Medical Records and Health Information Technicians	92,000	133,000	44.0%	Associate's degree
66017	Physical Therapy Assistants and Aides	82,000	118,000	44.0%	Associate's degree
32302	Respiratory Therapists	86,000	123,000	43.0%	Associate's degree
N/A***	Engineering, Natural Science, and Computer and Information Systems Managers	326,000	468,000	43.0%	Work exp., plus ba
32928	Surgical Technologists	54,000	77,000	42.0%	Postsecondary voc
66002	Dental Assistants	229,000	325,000	42.0%	Moderate-term on-
32908	Dental Hygienists	143,000	201,000	41.0%	Associate's degree
N/A***	Securities, Commodities, and Financial Services Sales Agents	303,000	427,000	41.0%	Bachelor's degree
66021	Occupational Therapy Assistants and Aides	19,000	26,000	40.0%	Associate's degree
32925	Cardiovascular Technologists and Technicians	21,000	29,000	39.0%	Associate's degree
63017	Correctional Officers	383,000	532,000	39.0%	Long-term on-the-j
32314	Speech-Language Pathologists and Audiologists	105,000	145,000	38.0%	Master's degree
N/A***	Social Workers	604,000	822,000	36.0%	Bachelor's degree
53508	Bill and Account Collectors	311,000	420,000	35.0%	Short-term on-the-j
24308	Biological Scientists	81,000	109,000	35.0%	Doctoral degree
66023	Ambulance Drivers and Attendants, Except EMTs	19,000	26,000	35.0%	Short-term on-the-j
32305	Occupational Therapists	73,000	98,000	34.0%	Bachelor's degree

occupation is given a unique classification code.

*** Source: Bureau of Labor Statistics Internet Site, http://stats.bls.gov/asp/oep/noeted/empnumb.asp (August 15, 2000).*

**** These occupational titles are comprised of more than one occupation, so single OES codes are not available.*

Table 3-5: 30 Fastest Net Employment Growth Occupations for Wyoming and U.S. Summed to Major Occupational Level, 1998-2008

Major Occupational Group	Number of Occupations in Wyoming	Percent of Wyoming's 30 Fastest Net Growth Occupations	Number of Occupations in U.S.	Percent of U.S.'s 30 Fastest Net Growth Occupations
Agriculture, Forestry, Fishing, and Related Occupations	0	0.0%	1	3.3%
Managerial and Administrative Occupations	4	13.3%	2	6.7%
Production, Construction, Operating, Maintenance, and Material Handling Occupations	11	36.7%	3	10.0%
Professional, Paraprofessional, and Technical	4	13.3%	10	33.3%
Sales and Related Occupations	5	16.7%	2	6.7%
Service Occupations	6	20.0%	8	26.7%
Total	**30**	**100.0%**	**26**	**86.7%**

Table 3-6: 30 Fastest Percent Employment Growth Occupations for Wyoming and U.S. Summed to Major Occupational Level, 1998-2008

Major Occupational Group	Number of Occupations in Wyoming	Percent of Wyoming's 30 Fastest Percent Growth Occupations	Number of Occupations in U.S.	Percent of U.S.'s 30 Fastest Percent Growth Occupations
Agriculture, Forestry, Fishing, and Related Occupations	0	0.0%	0	0.0%
Clerical and Administrative Support Occupations	8	26.7%	1	3.3%
Production, Construction, Operating, Maintenance, and Material Handling Occupations	11	36.7%	3	10.0%
Professional, Paraprofessional, and Technical	11	36.7%	18	60.0%
Sales and Related Occupations	0	0.0%	1	3.3%
Service Occupations	0	0.0%	7	23.3%
Total	**30**	**100.0%**	**30**	**100.0%**

Table 3-7: Wage Rates of Computer Science Occupations for Wyoming, U.S., and Destination States,* 1998

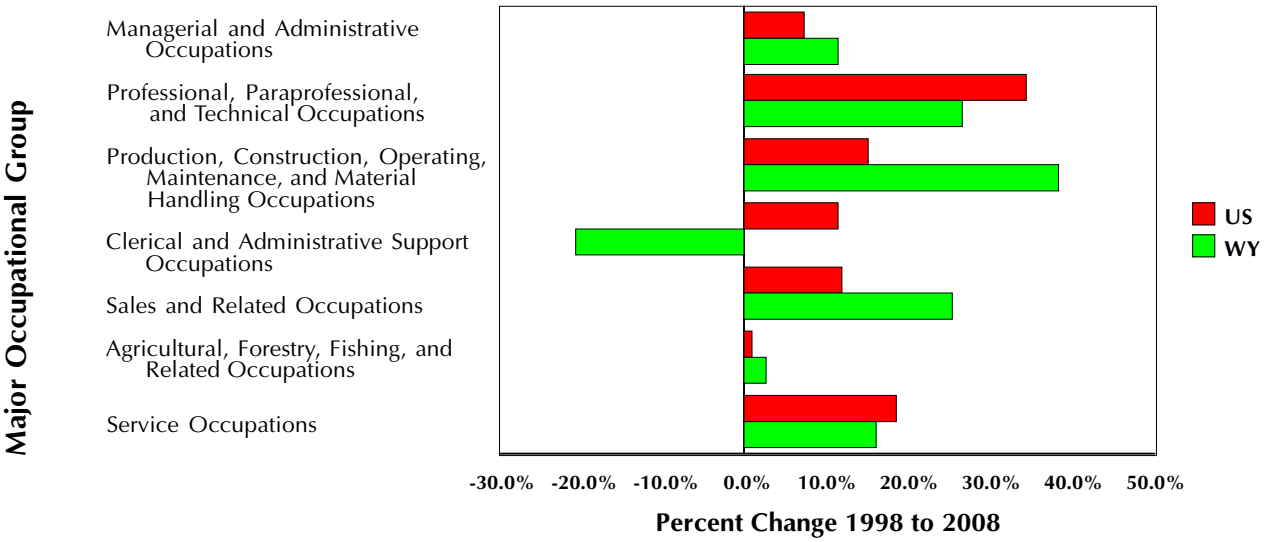
OES** Code - Occupation Title	Typical Education***	Average Hourly Wage***						
		Wyoming	U.S.	California	Colorado	Montana	Texas	Utah
22127 - Computer Engineers	Bachelor's degree	$23.21	$28.77	$30.78	$30.99	$26.77	$27.99	$27.49
25102 - Systems Analysts, Electronic Data Processing	Bachelor's degree	$19.53	$26.02	$27.06	$29.21	$19.58	$24.86	$23.20
25103 - Data Base Administrators	Bachelor's degree	$20.25	$24.28	$26.49	$25.09	$21.84	$23.70	$23.83

** States to which the Wyoming population is most likely to migrate.*
*** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*
**** Source: Bureau of Labor Statistics Internet Site, http://stats.bls.gov/ (August 15, 2000).*

occupations, Wyoming still shows considerable growth in this category.

Figure 3-2 (see page 47) shows the distribution of the major occupational groups in 1998 and 2008 for Wyoming and the U.S. Each piece of the pie represents the share of employment encompassed by the major occupational group in the designated year. In 1998, for instance, the percent of Wyoming's labor force employed in the production, construction, operating, maintenance, and material handling occupations was 26.8 percent and by 2008 it will grow to 27.5 percent. The U.S., for the same occupational group, is expected to decline from 24.8 percent in 1998 to 23.5 percent in 2008.

Figure 3-1: Projected Growth for Wyoming and U.S. by Major Occupational Group, 1998-2008

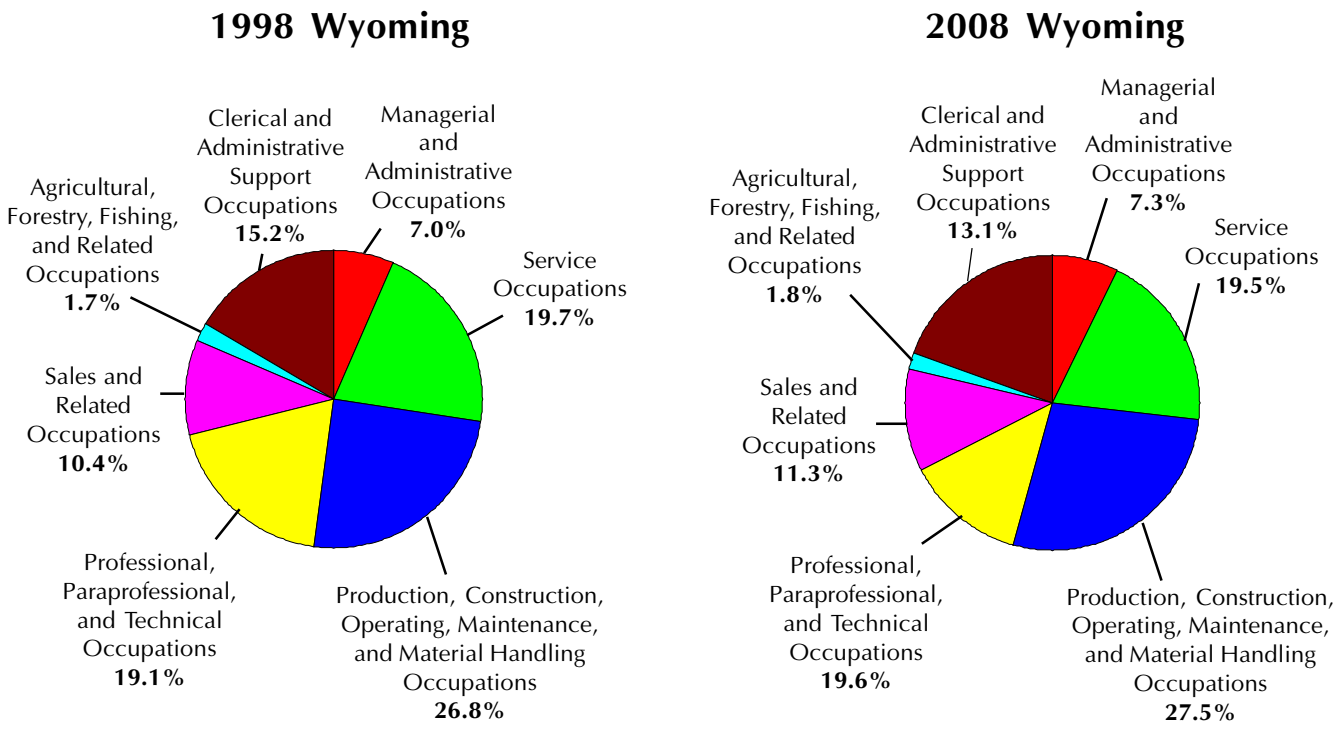


Taking this process one step further, by subtracting the percent share of an occupational group in 1998 from the percent share in an occupational group in 2008, we get the percent change in the share of employment from 1998 to 2008. For example, professional, paraprofessional, and technical occupations in the U.S. in 1998 equaled 20.8 percent of the total employment. By 2008, the percent share of total employment will increase to 22.6 percent. Therefore, the change in the percent share of employment in the U.S. for this occupational group will grow by 1.8 percent. This method was used to create Figure 3-3 (see page 48).

The occupational groups within Figure 3-3 (see page 48) are ordered so that the top one represents the group that pays the highest average hourly wage and the one on the bottom pays the lowest. Wyoming will outpace the nation in the share growth of managerial and administrative occupations and will lag behind in the share growth among the professional, paraprofessional, and technical occupations. Other observations include the growth in the production, construction, operating, maintenance, and material handling occupations in Wyoming while the percent share nationally is expected to decline. A review of Figure 3-3 demonstrates that Wyoming's largest growth in occupations will occur in the mid range wage jobs. Meanwhile, nationally the largest segment of growth will occur in the higher paying professional, paraprofessional, and technical occupations.

Even though the changes in the occupational structures of Wyoming and the U.S. differ over the next decade, there will be demand in the managerial and professional related occupations in Wyoming. Yet,

Figure 3-2: Percent of Total Employment for Wyoming and U.S. by Major Occupational Group, 1998 and 2008



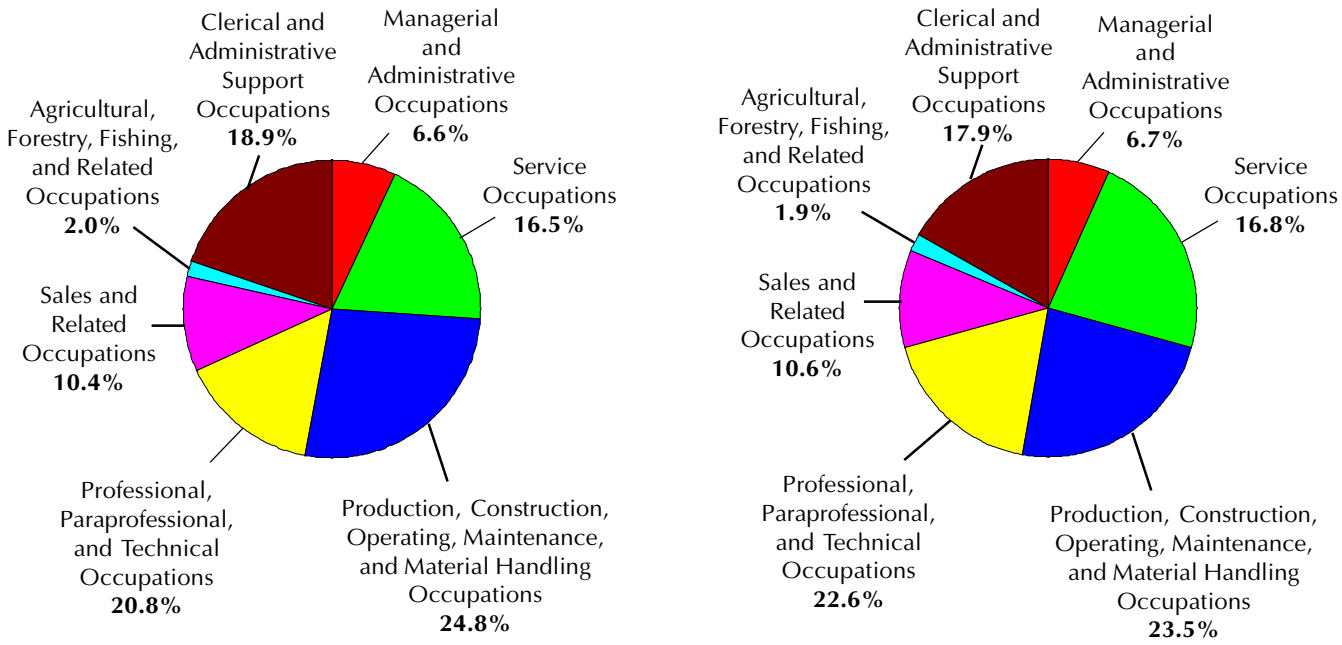
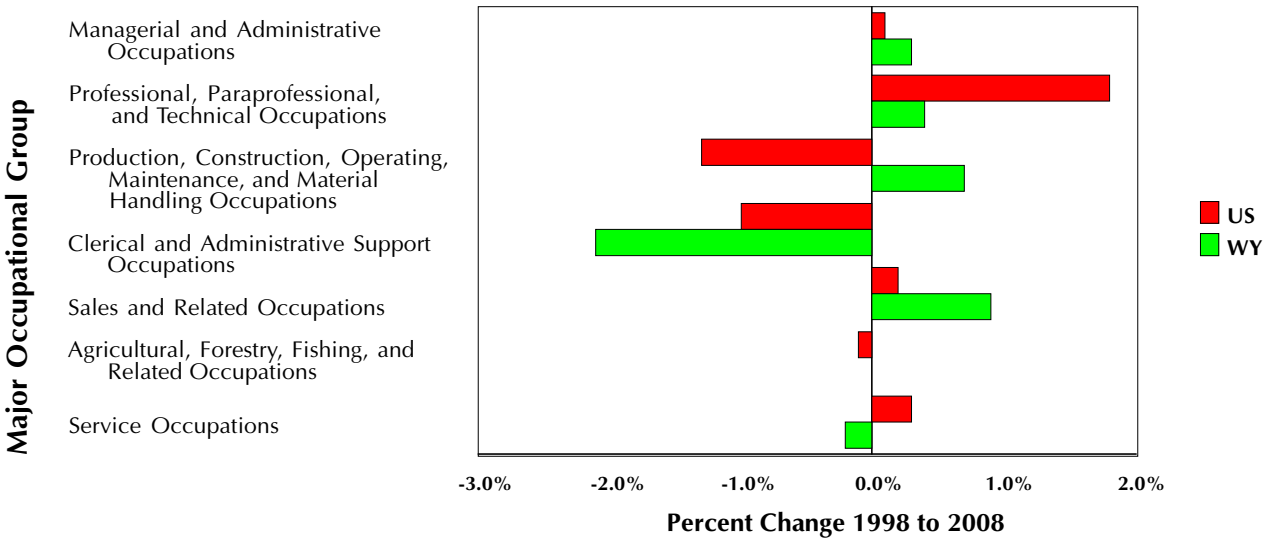


Figure 3-3: Wyoming and U.S. Percent Change in the Total Share of Employment by Major Occupational Group, 1998-2008



the demand for these two groups combined is greater nationally. Ninety-six percent of the occupations requiring at least a Bachelor's degree are encompassed within these two major occupational groups.

Chapters 5 and 6 address issues surrounding the maintenance and recruitment of a labor force that has a large investment in human capital (education). Chapter 5 looks at wage differentials to see what occupations requiring various levels of education/training pay in Wyoming, the U.S., and the five most likely destination states. Chapter 6 looks at the opportunity structure, public versus private sector employment, available for individuals at the level of education/training required. The results indicate that Wyoming is not currently in a position to recruit highly skilled labor and may well have difficulty maintaining the labor we have.

Chapter 4
Fastest Growing Occupations in Wyoming: Requisite Related Skills

> *"From the employee's perspective, a question to ask would be: What percentage of job seekers that were hired felt that their employment requirements had been met in terms of wages, skills sets, and lifestyle? Are employee needs being met?"* – Wyoming Workforce Development Council Minutes, June 6, 2000

As we saw in Chapter 3, the greatest growth in Wyoming will occur in production, construction, operating, maintenance, and material handling occupations. The occupational profile of growth produces consequences for the types of skills in demand. In addition to understanding occupational trends, economic and workforce developers, employers, and workers want to know how to identify, plan for, and meet the *specific* skill and training needs of businesses and their employees. The measure of a successful (sustainable) labor market transaction is often more than a job match – it is a skills match. Unless workers have or can gain the knowledge, experience, and skills to take on a new job, they may not stay employed for long. What are some of the projected skills associated with Wyoming's occupational demand?

O*Net (http://online.onetcenter.org/), the Occupational Information Network, developed by the U.S. Department of Labor, Employment and Training Administration (ETA), offers a standardized classification system that helps us characterize both occupational requirements and workers' skills. Table 4-1 (see pages 50-51) offers an example of Research & Planning's (R&P's) capacity to provide labor market skills analysis. The table lists the 25 occupational codes projected to add the **most** jobs to Wyoming's economy between the period 1998-2008.[15]

The categories used by O*Net in Table 4-1 permit ranking of each occupational code among 46 basic and cross-functional skills. A score, on a scale of 0 (lowest) to 100 (highest), comparatively rates the importance of each of these skills to each occupation. Those scores of 60 and above (shaded on the Table) indicate a skill of primary importance to the occupation, as defined by O*Net criteria. The analysis of skills associated with projected growth occupations demonstrates the prevalence of demand for specific skills and skill categories within the Wyoming labor market. To permit useful occupational skill comparisons, we arranged the skill categories in Table 4-1 to create a graduated pattern of management-related, **Cross Functional Skills** on the left and **Basic Skills** on the right. We also sorted the 25 net growth occupational codes in descending order by the sum of the skill importance ratings for the 46 skills. The shaded patterns of primary skill importance serve to identify and group together occupations sharing the same skill categories, if not the same skills.

In Table 4-1, the *mean rank of skill importance* at the bottom of the table provides a measure of the intensity of the demand for a specific skill among all 25 Occupational Employment Statistics (OES) Codes. Notably, "problem identification," listed among **Complex Problem Solving Skills**, is the only cross-functional skill with a mean importance rank above 50. A mean in the middle range of 40-60 indicates a highly transferable skill, one important across a large share of occupations.

The *median rank of skill importance* at the bottom of Table 4-1, especially if it falls well below the mean, indicates that a skill is important to only a few occupations. For example, the **Resource Skill**, "management of personnel resources," shows a median score of 16 and a mean score of 32. This lower median score reflects that only five of the twenty-five occupational codes identify management of personnel resources as an important occupational requirement. In contrast, when a median value

Table 4-1: Importance of Distributed Skills for Top 25 Projected Net Employment Growth Occupations* in Wyoming, 1998-2008

Shading indicates skills of primary occupational importance. >59, a definition consistent with O*Net Project standards, U.S. Department of Labor, Employment and Training Administration, Office of Policy and Research.

OES Code*	Occupational Title	Rank by Net Employment Growth	Cross Functional Skills: Resource Skills: Time Management	Resource Skills: Management of Financial Resources	Resource Skills: Management of Material Resources	Resource Skills: Management of Personnel Resources	Systems Skills: Visioning	Systems Skills: Systems Perception	Systems Skills: Identifying Downstream Consequences	Systems Skills: Identification of Key Causes	Systems Skills: Judgment and Decision Making	Systems Skills: Systems Evaluation	Complex Problem Solving Skills: Problem Identification	Complex Problem Solving Skills: Information Gathering	Complex Problem Solving Skills: Information Organization	Complex Problem Solving Skills: Synthesis/Reorganization	Complex Problem Solving Skills: Idea Generation	Complex Problem Solving Skills: Idea Evaluation	Complex Problem Solving Skills: Implemenation Planning	Complex Problem Solving Skills: Solution Appraisal	Technical Skills: Operations Analysis	Technical Skills: Technology Design	Technical Skills: Equipment Selection	Technical Skills: Installation	Technical Skills: Programming	Technical Skills: Testing	Technical Skills: Operation Monitoring	Technical Skills: Operation and Control
19005	General Mgrs & Top Execs	6																										
	Government Service Executives		50	83	42	83	79	75	79	83	88	79	88	88	71	63	71	83	79	79	42	0	17	17	0	0	0	17
	Private Sector Executives		75	88	63	75	79	88	88	88	92	88	79	75	58	46	71	79	75	83	50	4	25	0	0	0	0	8
81005	First Line Superv: Const,Extrac	15																										
	Superv, Constr. Trade Wrkrs.		80	40	70	80	65	55	55	60	65	60	65	60	50	35	50	50	70	55	55	15	70	30	0	30	40	35
	Superv, Extraction Workers		75	25	55	85	50	60	55	65	75	50	70	65	45	35	50	65	65	60	55	10	60	20	0	20	30	45
13002	Financial Managers	12	67	83	42	75	67	71	67	67	88	79	79	83	67	50	46	67	71	67	54	4	17	17	8	4	0	25
31308	Teachers, Secondary School	4	67	17	21	33	38	28	33	46	54	46	50	75	75	50	63	63	75	67	54	21	58	13	21	17	4	29
27307	Residential Counselors	22	67	33	46	63	50	46	42	71	71	25	92	71	54	46	71	63	54	71	33	4	21	0	0	0	0	4
87917	Service Unit Operators	24	50	21	29	58	38	54	50	67	71	25	83	58	54	38	54	50	42	67	38	13	88	8	0	46	92	96
32502	Registered Nurses	2	63	17	42	54	40	48	42	52	73	42	67	60	54	33	40	50	50	54	29	21	46	14	0	21	31	33
15026	Food Service & Lodging Mgrs	18																										
	Food Service Managers		83	63	67	79	58	50	54	58	63	50	79	50	33	33	58	50	71	50	50	4	21	0	0	13	8	4
	Lodging Managers		54	46	63	75	33	29	33	54	63	46	71	50	38	21	29	38	50	50	42	8	38	13	8	8	13	38
41002	Marketing/Sales Supervisors	13	42	58	54	58	46	50	46	63	63	46	50	67	42	25	54	58	58	54	25	4	13	0	0	4	13	13
32505	Licensed Practical Nurses	25	33	4	25	8	33	33	25	50	58	8	67	71	50	33	25	42	29	38	8	38	50	13	4	13	50	54
87202	Electricians	10	25	10	25	15	20	20	25	35	40	15	60	40	50	25	30	30	20	20	20	25	65	75	0	65	40	50
87311	Concrete & Terrazzo Finishers	21	17	8	29	17	38	17	21	50	33	17	54	46	58	25	42	67	42	54	58	33	79	38	0	29	33	54
87502	Plumbers/Pipe Fitters	23																										
	Plumbers		45	10	25	30	30	25	20	35	35	20	55	45	40	15	30	5	35	35	45	45	60	65	0	30	40	60
	Pipe Fitters		25	10	30	0	35	25	15	35	35	30	55	40	45	30	35	35	40	35	45	35	70	80	0	40	40	65
85132	Maintenance Repairers, Gen Util	8	17	0	25	0	8	13	13	46	21	13	79	29	50	13	25	25	25	42	13	29	71	92	0	54	50	50
87102	Carpenters	7	30	15	45	0	35	15	10	35	30	20	40	45	35	20	30	30	40	30	45	30	55	70	0	10	10	50
65026	Cooks, Restaurant	9	17	17	33	33	17	13	8	13	25	8	38	33	42	13	29	29	33	29	25	4	54	0	0	21	21	38
98999	Helpers & Laborers, NEC	14																										
	Production Helpers		25	0	25	5	10	10	5	25	10	5	40	30	30	10	15	15	15	30	10	20	55	50	0	20	50	60
	Production Laborers		20	0	10	0	20	0	20	0	10	5	30	30	20	0	20	15	10	20	5	0	40	35	0	5	20	45
49021	Stock Clerks, Sales Floor	20	4	13	42	0	13	13	13	29	33	4	63	46	21	13	17	8	0	21	25	4	21	4	0	0	0	21
49011	Salespersons, Retail	1	8	19	10	0	6	2	12	19	10	0	50	29	35	6	15	10	2	21	4	13	8	2	0	2	2	10
49023	Cashiers, General	3	17	21	13	13	4	13	4	13	13	4	42	21	29	8	4	8	4	25	0	0	0	0	0	0	13	33
65008	Waiters & Waitresses	17	4	4	4	0	8	8	0	17	8	0	29	8	8	0	4	4	0	25	4	0	21	0	0	0	4	0
97105	Truck Drivers, Light	19	25	13	13	12	4	0	0	13	13	4	21	13	8	0	8	8	21	4	0	4	25	8	0	0	46	58
67005	Janitors & Cleaners	11	13	0	8	4	4	0	0	8	8	0	25	13	21	8	17	8	4	13	4	4	46	33	0	4	8	42
65041	Comb Food Prep/Serv Wkrs	16	8	13	8	4	4	4	0	8	13	0	13	17	13	0	4	4	0	8	4	0	4	0	0	0	0	17
65038	Food Preparation Workers	5	13	2	17	10	4	4	4	0	4	0	21	8	17	8	8	4	0	4	12	0	42	0	0	0	13	21
	Mean Rank of Skill Importance Among These Net Growth Occupations in Wyoming		37	24	33	32	31	29	28	40	42	26	55	46	40	23	34	35	36	40	28	13	41	23	1	15	22	36
	Median Rank of Skill Importance Among These Net Growth Occupations in Wyoming		28	16	29	16	33	23	21	41	35	19	55	46	42	23	30	33	38	37	27	6	44	13	0	9	13	37

** Sorted in descending order by sum of occupational skill importance ratings attached to the Occupational Employment Statistics (OES) Code. This order facilitates the comparison of occupations requiring relatively diverse or high-level skills with occupations requiring fewer or lower-level skills among demand occupations. Readers might also compare occupational categories (i.e., OES Codes 65008 - 67005 are examples of service occupations; 87102 - 87917 are examples of construction trades and extraction occupations) to learn what skills are common to these groups.*

Table 4-1: Importance of Distributed Skills for Top 25 Projected Net Employment Growth Occupations* in Wyoming, 1998-2008 (Continued)

Shading indicates skills of primary occupational importance. >59, a definition consistent with O*Net Project standards, U.S. Department of Labor, Employment and Training Administration, Office of Policy and Research.

		Cross Functional Skills (Continued)										Basic Skills												
		Technical Skills (Continued)				Social Skills						Process Skills				Content Skills								
OES Code*	Occupational Title	Product Inspection	Equipment Maintenance	Troubleshooting	Repairing	Social Perceptiveness	Coordination	Persuasion	Negotiation	Instructing	Service Orientation	Critical Thinking	Active Learning	Learning Strategies	Monitoring	Reading Comprehension	Active Listening	Writing	Speaking	Mathematics	Science	Total
19005	General Mgrs & Top Execs																					
	Government Service Executives	38	0	0	0	75	92	63	71	42	38	92	83	50	83	88	92	96	96	75	8	2,638
	Private Sector Executives	29	0	8	0	58	96	58	58	29	29	79	63	38	79	75	71	75	83	58	4	2,467
81005	First Line Superv: Const,Extrac																					
	Superv, Constr. Trade Wrkrs.	85	30	55	30	60	85	50	50	75	30	70	55	50	55	70	75	70	75	65	20	2,495
	Superv, Extraction Workers	60	35	45	25	60	85	50	50	65	25	65	45	40	55	60	65	60	70	50	50	2,350
13002	Financial Managers	46	0	13	0	50	83	29	46	29	29	88	71	38	71	83	67	79	79	75	8	2,349
31308	Teachers, Secondary School	58	8	13	8	79	50	33	25	96	67	63	67	92	75	83	79	71	96	75	42	2,298
27307	Residential Counselors	21	21	13	4	100	79	46	58	46	50	88	63	63	54	67	92	71	83	38	0	2,155
87917	Service Unit Operators	38	29	58	33	25	63	4	13	25	4	63	42	29	63	46	58	42	71	54	50	2,100
32502	Registered Nurses	31	10	8	2	73	71	36	29	63	79	71	56	48	65	73	69	65	79	29	65	2,098
15026	Food Service & Lodging Mgrs																					
	Food Service Managers	63	0	8	0	63	83	21	29	42	71	67	58	38	54	58	50	54	67	46	13	2,034
	Lodging Managers	33	38	46	33	71	79	21	21	29	88	58	38	25	42	46	67	50	83	50	0	1,929
41002	Marketing/Sales Supervisors	29	8	17	4	50	63	21	33	54	38	67	46	42	54	58	58	50	67	54	0	1,819
32505	Licensed Practical Nurses	42	17	13	4	63	54	25	21	21	75	63	50	46	63	67	75	54	63	50	50	1,778
87202	Electricians	65	65	75	75	10	40	10	10	50	10	50	35	30	30	55	25	20	30	60	55	1,645
87311	Concrete & Terrazzo Finishers	79	29	17	46	8	38	4	4	4	0	38	29	29	63	42	38	21	33	58	46	1,585
87502	Plumbers/Pipe Fitters																					
	Plumbers	50	50	55	60	20	55	5	15	20	20	35	40	20	40	50	45	10	45	45	15	1,575
	Pipe Fitters	70	45	45	40	5	15	5	10	5	5	35	40	15	40	35	20	10	15	45	25	1,455
85132	Maintenance Repairers, Gen Util	50	83	75	88	4	25	4	4	4	17	25	21	17	29	25	13	21	17	29	25	1,379
87102	Carpenters	60	40	25	55	5	30	0	5	5	0	25	30	10	45	50	35	10	20	50	10	1,285
65026	Cooks, Restaurant	54	13	8	4	29	46	0	8	29	33	21	38	21	50	38	29	29	38	33	17	1,131
98999	Helpers & Laborers, NEC																					
	Production Helpers	40	65	20	55	10	30	0	10	10	15	20	25	20	30	30	40	35	35	35	5	1,100
	Production Laborers	50	15	10	20	0	15	0	5	0	15	5	20	15	30	40	30	40	15	35	5	745
49021	Stock Clerks, Sales Floor	46	8	4	4	54	13	8	4	8	67	13	8	13	13	38	50	33	42	50	0	904
49011	Salespersons, Retail	19	0	0	4	71	13	35	13	13	92	15	8	10	15	40	67	40	77	58	2	887
49023	Cashiers, General	33	0	0	0	63	17	0	8	4	71	25	21	8	38	42	54	42	67	79	0	874
65008	Waiters & Waitresses	38	4	4	4	63	33	8	0	8	92	4	0	8	33	25	88	67	75	46	0	760
97105	Truck Drivers, Light	29	42	21	38	17	17	0	0	4	25	0	0	4	13	38	25	38	38	29	0	699
67005	Janitors & Cleaners	25	71	50	63	0	13	0	0	0	17	4	8	8	25	29	17	21	21	13	17	697
65041	Comb Food Prep/Serv Wkrs	17	4	8	0	50	21	4	0	0	88	0	4	8	8	33	83	58	75	54	0	661
65038	Food Preparation Workers	33	29	4	4	42	29	0	0	0	63	0	8	8	21	38	63	21	25	8	0	612
	Mean Rank of Skill Importance Among These Net Growth Occupations in Wyoming	44	25	24	23	43	48	18	20	26	42	42	36	28	45	51	55	45	56	48	18	
	Median Rank of Skill Importance Among These Net Growth Occupations in Wyoming	41	19	13	6	50	43	8	12	21	32	37	38	23	44	46	58	42	67	50	9	

** Sorted in descending order by sum of occupational skill importance ratings attached to the Occupational Employment Statistics (OES) Code. This order facilitates the comparison of occupations requiring relatively diverse or high-level skills with occupations requiring fewer or lower-level skills among demand occupations. Readers might also compare occupational categories (i.e., OES Codes 65008 - 67005 are examples of service occupations; 87102 - 87917 are examples of construction trades and extraction occupations) to learn what skills are common to these groups.*

exceeds the mean value, the skill is then important to a considerable share of occupations, but is assigned a low or very low importance to others. The **Content Skill**, "speaking," has a higher median than mean score. "Speaking" is considered a primarily important skill among 14 of the 25 occupational codes. However, for successful performance of some solitary occupations (e.g., truck drivers, food preparation workers), "speaking" holds much less importance.

Table 4-1 shows over the 1998-2008 period that only seven of 25 occupations give primary importance to one or more skills in all three of the **Resource**, **Systems,** and **Complex Problem Solving Skills** categories. These seven include general/executive (OES 19005), financial (13002), food/lodging (15026) management positions, construction supervisors (81005), secondary teachers (31308), residential counselors (27307), and registered nurses (32502). These seven occupations also give primary importance to several of selected **Social** and **Basic Skills**. Another two occupations, service unit operators (87917) and marketing sales supervisors (41002), score more often in the middle ranges of skill importance for several **Cross Functional** and **Basic Skills**.

Only supervisors/construction trade workers (OES Code 81005), service unit operators (87917), pipe fitters (87502), maintenance repairers/general utility (85132), and carpenters (87102) are classified as having some technical skills with an importance rank of 80 or higher. The majority of net growth occupations in Wyoming assign comparatively low importance to technical skills.

Several of Wyoming's projected net growth occupations, particularly those associated with the Retail Trade and Services industries [e.g., stock clerks (49021), cashiers (49023), waiters & waitresses (65008), food preparation (65041), and service workers (65038)] assign low importance to virtually every **Cross Functional Skills** category. Exceptions are two **Social Skills**: "social perceptiveness" and "service orientation." The **Content Skills** of "active listening" and "speaking," especially, are primarily important to these occupations.

Analysis of demand for specific occupational skills yields several observations. Only one of Wyoming's 25 net growth occupational codes, registered nurses (32502), identifies "science" as a primary skill qualification, and nearly one-third of the 25 occupational codes assign "science" a score of zero (0). Among **Cross Functional Skills**, most net growth occupations in Wyoming appear to assign *low* importance to the **Social Skills** of "negotiation," "persuasion," and "instructing." Few occupations attribute high importance to the **Technical Skills** of "technology design," "installation," "programming," "testing," "operation monitoring," "equipment maintenance," and "repairing." Among the **Complex Problem Solving Skills**, "synthesis/reorganization" appeared of primary importance only to one occupational code, general managers/top executives (19005).

To a large extent, the occupational skill analysis yields few surprises. It does, however, refine our understanding of the earlier observation that too many of the net growth jobs in Wyoming are associated with lower skill levels and lower wages. One of the challenges faced by junior colleges or technical schools, in particular, is to determine a response to the steady demand for either lower-skilled workers or educated workers who will accept low paying jobs. How do Wyoming educators balance their responsiveness to a local labor market demanding fewer high-level **Cross Functional skills**, and at the same time demographic changes requiring colleges to compete for more out-of-state students focused on higher educational opportunities, seeking training for jobs without regard to location?

Chapter 5
Interstate Competition for Labor: Wages

> *"We need to find out where offers of employment are coming from – if they're coming from out-of-state, what would it take to keep the student here? Is it money, job opportunity, or growth? Until we get some of this data, we could be doing the best job in training, but training them for our competitive states. That will not help us solve the workforce problems."* – Wyoming Workforce Development Council Minutes, June 6, 2000

Job vacancies occur in Wyoming as a result of increased demand or industrial growth, turnover, and replacement need. The focus of this chapter is out-migration as a determinant of increased labor demand in Wyoming. We will focus on the five most likely destination states and assess the interstate competition for labor. The analysis in this chapter necessitates an introduction to data generated by the U.S. Department of Labor's Bureau of Labor Statistics (BLS) from the State-Federal Occupational Employment Statistics (OES) wage survey program. We will also demonstrate how these resources are used in applied research. The data used in this chapter are available from our Internet site (http://lmi.state.wy.us).

Our analysis indicates that wages paid in Wyoming are lower for almost all occupations compared to destination states and the national average. Further, it is found that the difference in wages between Wyoming, destination states, and the nation increases as the level of education/experience needed to work in an occupation increases. This chapter shows that, in an interstate labor market, Wyoming is finding it difficult to compete with respect to wages. The data and method used to conduct this analysis are available in Appendix A.

Wage rates in Wyoming are often lower than in other states. A review of Table 5-1 (see page 54) shows that medicine and health services manager (OES Code 15008)[16] has an average wage nationally of $25.17/hour. In Wyoming, the same occupation pays $22.09/hour, and in Alaska it pays $27.74/hour. The column titled wy_p represents Wyoming's wage relative to the national average wage. In this example a medicine and health services manager is generally paid 12.2 percent less in Wyoming and 10.2 percent (ak_p) more in Alaska than in the U.S. The complete "Occupation, Wage and Employment Table" has the same information for all available occupations for each of the 50 states and is available via our Internet site at http://lmi.state.wy.us.

Applied Research using the "Occupation, Wage, and Employment Table"

It is common belief that Wyoming exports one of its most important resources each year – young workers. What factors could lead high school or college graduates to seek employment elsewhere? Two factors, employment opportunities and wages, become more important as individual investment in human capital increases. Although not an exhaustive list, other factors such as location, quality of life, and cost of living play an important role in a decision to relocate. This section will focus on the difference between wages in Wyoming, the U.S., and five destination states for out-migration from Wyoming.[17] Further, we will also show that as the education/experience level necessary to work in occupations increases, so does the difference in the wages between Wyoming and all but one of the six areas considered.

Table 5-1: Selected Occupations from the "Occupation, Wage, and Employment Table 1998"*

OES** Code	Occupational Title	Typical Education/Experience Level	U.S.	WY	wy_p***	AK	ak_p***
13002	Financial Managers	Work experience, plus a bachelor's or higher degree	$28.56	$23.90	-16.3%	$26.40	-7.6%
13005	Personnel, Training, and Labor Relations Managers	Work experience, plus a bachelor's or higher degree	$25.10	$22.27	-11.3%	$27.31	8.8%
13008	Purchasing Managers	Work experience, plus a bachelor's or higher degree	$22.39	$14.33	-36.0%	$21.16	-5.5%
13011	Marketing, Advertising, and Public Relations Managers	Work experience, plus a bachelor's or higher degree	$28.85	$18.64	-35.4%	$23.23	-19.5%
13014	Administrative Services Managers	Work experience, plus a bachelor's or higher degree	$23.70	$19.60	-17.3%	$21.47	-9.4%
13017	Engineering, Mathematical, and Natural Sciences Managers	Work experience, plus a bachelor's or higher degree	$34.54	$29.14	-15.6%	$31.90	-7.6%
15002	Postmasters and Mail Superintendents	Work experience in related occupation	$22.28	$19.33	-13.2%	$17.91	-19.6%
15005	Education Administrators	Work experience, plus a bachelor's or higher degree	$27.78	$25.77	-7.2%	$28.84	3.8%
15008	Medicine and Health Services Managers	Work experience, plus a bachelor's or higher degree	$25.17	$22.09	-12.2%	$27.74	10.2%
15011	Property and Real Estate Managers and Administrators	Bachelor's degree	$17.29	$11.80	-31.8%	$13.93	-19.4%

** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*
*** Data for this table was compiled by Research & Planning using data provided by the Bureau of Labor Statistics Occupational Employment Statistics (OES) survey program. The complete table for all 50 states compared to the National average wage is available on our website at* ***http://lmi.state.wy.us/staffing/Staffing.htm****.*
**** The column titled wy_p represents Wyoming's wage relative to the national average wage; Alaska's wage relative to the national average wage is represented by ak_p.*

While the data provided in the "Occupation, Wage and Employment Table" breaks the typical education/experience into twelve levels, five aggregate levels were chosen for this analysis (see Table 5-2).

To further reduce the presentation of data, only five states and the U.S. were used in the analysis. The purpose of this research is to see if wages in other states compared to Wyoming could have an influence on a individual's decision to relocate. Only the five most likely destination states for people leaving Wyoming were included in the analysis. A review of Internal Revenue Service (IRS) data[18] reveals that these five states (California, Colorado, Montana, Texas and Utah) have been consistently the highest destination states for migration from Wyoming since 1992 (the first year of data available).

Results

Grouping the data on education/experience level and calculating the weighted-average wage, as described in Appendix A, produces Table 5-3. The percent differences in wages relative to Wyoming were calculated to compare the destination states and the U.S. to Wyoming. For example, California's average wage for an occupation requiring a bachelor's degree is $26.82/hour. In contrast, the wage in Wyoming is $18.86/hour. California's wage relative to Wyoming's is the difference between California and Wyoming's wage, divided by Wyoming's wage. Looking at the second part of Table 5-3 reveals that occupations requiring a bachelor's degree pay approximately 42.2 percent more in California than in Wyoming.
The data from the lower tier of Table 5-3 was used to create Figure 5-1 (see page 56). Wyoming is represented in this figure as the 0 percent axis. Bars to the right of the 0 percent axis represent states paying higher wages for the specified education/experience level. Bars to the left represent states paying lower wages for the specified education/experience level. As the education/experience level needed to work in an occupation increases, so does the difference between Wyoming's and the destination state's wages. This holds true for all states, except Montana which pays less for all but one

Table 5-2: Typical Education/Experience Levels and Aggregate Levels for Analysis

Typical Education/Experience Level	Aggregate Levels for Analysis
Category contains occupations with diverse education and experience levels. However, the Bureau of Labor Statistics (BLS) did not assign a level to the occupations.	Education Not Available
Short term on-the-job-training Moderate term on-the-job-training Long term on-the-job-training Work experience in related occupation	Short to Long Term On-the-Job-Training / Job Experience
Post secondary vocational training Associate's degree	Post Secondary Training / Associate's Degree
Bachelor's degree Work experience, plus a bachelor's or higher degree Master's degree	Bachelor's / Bachelor's with Experience / Master's Degree
Doctoral degree First professional degree	PhD / Professional degree

Table 5-3: Average Hourly Wage by Aggregate Education Level and Wyoming's Average Hourly Wage Relative to the U.S. and Destination States,* 1998

Aggregate Typical Education/Experience	Wyoming	California	Colorado	Montana	Texas	Utah	U.S.
Short to Long Term On-the-Job-Training / Job Experience	$9.83	$12.00	$11.09	$9.50	$10.32	$10.20	$11.25
Post Secondary Training / Associate's Degree	$13.53	$19.27	$16.44	$13.67	$15.77	$15.27	$17.52
Bachelor's / Bachelor's with Experience / Master's	$18.86	$26.82	$24.56	$18.36	$22.88	$21.30	$24.92
PhD / Professional Degree	$33.13	$39.55	$37.47	$31.33	$40.63	$38.26	$39.46
Not Available	$12.06	$14.45	$13.91	$10.96	$12.55	$12.57	$13.64

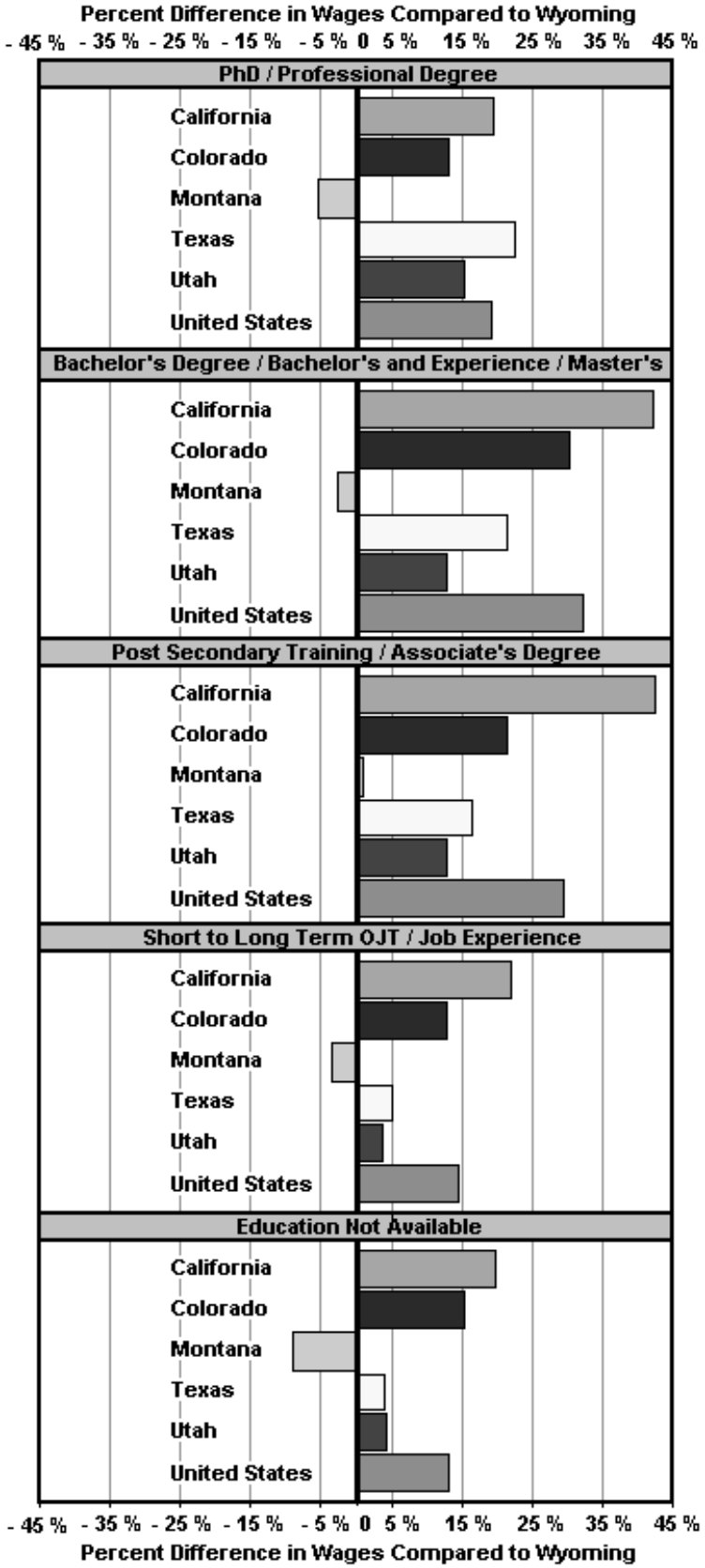
Aggregate Typical Education/Experience	California % Difference Wyoming	Colorado % Difference Wyoming	Montana % Difference Wyoming	Texas % Difference Wyoming	Utah % Difference Wyoming	U.S. % Difference Wyoming
Short to Long Term On-the-Job-Training / Job Experience	22.1%	12.9%	-3.3%	5.0%	3.8%	14.4%
Post Secondary Training / Associate's Degree	42.4%	21.5%	1.0%	16.5%	12.9%	29.5%
Bachelor's / Bachelor's with Experience / Master's	42.2%	30.2%	-2.6%	21.3%	13.0%	32.1%
PhD / Professional Degree	19.4%	13.1%	-5.4%	22.6%	15.5%	19.1%
Not Available	19.8%	15.3%	-9.1%	4.1%	4.2%	13.0%

** States to which the Wyoming population is most likely to migrate.*

education/experience level. For post secondary training/associate's degree occupations, Montana pays slightly higher wages ($13.67) than Wyoming ($13.53) – (see Table 5-3).

This analysis does not account for other factors affecting an individual's or a family's decision to relocate. It does account for one that becomes more important as an individual invests more in education and training (human capital), a return on investment in the form of wages. Chapter 6 introduces another resource developed by Research & Planning (R&P) and explores the opportunity structure of labor markets in Wyoming, the destination states, and the nation. "Occupational Staffing Patterns and Wages" are used to compare private to public sector employment opportunities in these areas.

Figure 5-1: Percent Difference in Average Hourly Wage for the Five Most Likely Destination States* and U.S., Compared to Wyoming's Average Hourly Wage (the Zero Percent Axis) by Typical Education/Experience, 1998



** States to which the Wyoming population is most likely to migrate.*

Chapter 6
Interstate Competition for Labor: Public vs. Private Employment Opportunity

> *"Identify initiatives of competitors...including the Front Range and Wasatch Front...[and] identify what competitors (specific states or regions) are doing to attract employers and employees in the areas of training, wages, incentive packages, marketing efforts, etc...."* – Wyoming Workforce Development Council Minutes, June 6, 2000

This chapter examines another factor that becomes increasingly important to individuals with an investment in advanced education. A recent study indicates that private sector employment pays higher wages than public sector (government) employment. An article in the May, 1996 issue of ***Monthly Labor Review*** entitled "The Public-Private Debate: What Do the Data Show?"[19] had the following conclusions:

- At the low end of the pay scale, state and local governments generally paid better than private industry did.
- Among white-collar jobs, private industry usually paid better than state and local governments did.
- Among white-collar jobs, within occupations, as pay rose with the level of duties and responsibilities, the private sector paid increasingly better wages.
- State and local government pay lagged far behind that of private industry for professional and administrative occupations.

Securing the potential to increase earnings plays a role in individual and family decisions to relocate. This chapter focuses on the opportunities available for private sector employment in Wyoming compared to five destination states, and the nation. Further, our analysis demonstrates that as the education required to work in a specific occupation increases, the opportunities for private sector employment in Wyoming decrease relative to destination states, and the nation.

Industrial and Occupational Staffing Patterns

The data from the National Industry-Occupation Employment Matrix developed by the Bureau of Labor Statistics (BLS) form the foundation of this analysis. The 1998 matrix data were developed primarily from the Occupational Employment Statistics (OES) survey (discussed in the previous chapter), the Current Employment Statistics (CES) survey, and the Current Population Survey (CPS).[20] The data include information on employment for over 240 detailed industries and more than 500 detailed occupations within these industries.

Research & Planning (R&P) aggregated this extensive data set to the 2-digit industry level while maintaining the detailed occupations. The result is the "Industrial and Occupational Staffing Patterns" available on our web-site (http://lmi.state.wy.us) in Excel format. Table 6-1 (see page 58) shows the 20 most frequently occurring occupations in coal mining at the 2-digit industry level (SIC 12).

Table 6-1: Excerpt* from "Industrial and Occupational Staffing Patterns" Data for 2-Digit Standard Industrial Classification (SIC) 12 - Coal Mining, 1998

Standard Industrial Classification (SIC) 12 - Coal mining		
OES Code**	**Occupational Title**	**Percent in Industry**
87930	Mining, quarrying, and tunneling occupations	17.73%
81000	Blue-collar worker supervisors	8.29%
85109	Industrial machinery mechanics	8.24%
87988	All other extraction and related workers	8.01%
97938	Grader, bulldozer, and scraper operators	6.87%
97910	All other material moving equipment operators	6.31%
98998	All other helpers, laborers, and material movers, hand	4.31%
97001	Truck drivers light and heavy	3.53%
97923	Excavation and loading machine operators	2.87%
87202	Electricians	2.46%
85314	Mobile heavy equipment mechanics	2.09%
97998	All other transportation and material moving equipment operators	1.95%
19998	All other managers and administrators	1.87%
98310	Helpers, construction trades	1.47%
19005	General managers and top executives	1.37%
22108	Mining engineers, including mine safety engineers	1.00%
85995	All other mechanics, installers, and repairers	0.99%
97947	Industrial truck and tractor operators	0.93%
95094	All other plant and system operators	0.77%
58097	Stock clerks and order fillers	0.73%
87898	All other construction trades workers	0.63%
97956	Operating engineers	0.62%
92999	All other machine operators, tenders, setters, and set-up operators	0.59%
55347	Office clerks, general	0.59%
87110	Carpenters	0.53%

** The complete file from which Table 6-1 was extracted for all 2-digit SIC codes and related occupations is available on our website at http://lmi.state.wy.us.*
*** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*

Combining data collected from the ES-202 program (Unemployment Insurance (UI) covered employment and wages) with information in the staffing pattern table, we can estimate the number of employees working in a specific occupation within the 2-digit industry. For example, the 1998 ES-202 data showed annual employment in coal mining of 4,504 jobs. We know from the staffing patterns (Table 6-1) that 17.7 percent of the individuals employed in coal mining work in mining, quarrying, and tunneling occupations. Multiplying 4,504 (total employment in SIC 12) by 17.7 percent yields 797 individuals in this detailed occupation. Table 6-1 only lists the first 20 occupations that occur most frequently in SIC 12; the actual data on our Internet site provides a breakdown of SIC 12 among 67 occupations.

1998 National Covered Employment and Wages

The BLS recently released the 1998 Covered Employment and Wages database for all 50 states and the nation on compact disk. We extracted the data for Wyoming, the destination states, and the nation for total employment in 2-digit industry by ownership. The ownership code defines whether the employment occurred in the public (government) or private sector.

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The UI covered employment data were merged with the staffing patterns for each 2-digit industry. This step allowed the inference of occupation and subsequently the educational level typically required for the occupation. The total employment in a 2-digit industry was multiplied by the percent of occupations

within the 2-digit industry, as in the example given previously. This procedure was used for all 2-digit industries in Wyoming, destination states, and the U.S. Lastly, the resulting data set was aggregated to groups by area name (state or U.S.), educational levels (categorized in the previous chapter), and ownership (public or private sector).

Table 6-2 shows that the percent of total UI covered employment in the public sector is higher in Wyoming (20.8%) than all other areas considered (i.e., California's public sector employment only comprises 13.0 percent of that states' total UI covered employment). High levels of public sector employment are not uncommon for rural states, as the services generally provided by state, federal, and local governments are as much a necessity to consumers and clients in less populated areas as they are in urban areas.

Table 6-2: Employment for Wyoming, Destination States,* and U.S. in the Public and Private Sector by Typical Education/Experience Levels, 1998

	Wyoming		California		Colorado		Montana	
Aggregate Typical Education/Experience	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**
On-the-Job-Training / Job Experience	12,007	71,605	501,529	4,972,495	72,486	738,002	14,735	129,538
Post Secondary Training / Associate's	2,864	6,890	68,873	559,602	11,065	80,234	1,991	16,460
Bachelor's / Bachelor's with Exp. / Master's	11,129	16,327	508,835	1,376,170	76,739	198,437	17,482	30,855
PhD / Professional Degree	944	1,462	23,174	124,881	5,387	16,643	1,014	3,695
Not Available	12,134	52,262	505,026	3,740,528	78,756	528,009	17,267	86,199
Total Employment by Sector	39,079	148,547	1,607,438	10,773,676	244,432	1,561,324	52,490	266,747
Percent Employment by Sector	20.8%	79.2%	13.0%	87.0%	13.5%	86.5%	16.4%	83.6%
Total Employment	**187,626**		**12,381,114**		**1,805,757**		**319,237**	

	Texas		Utah		US	
Aggregate Typical Education/Experience	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**
On-the-Job-Training / Job Experience	388,010	3,057,421	36,429	355,358	4,648,597	44,340,151
Post Secondary Training / Associate's	48,974	379,123	4,366	37,951	739,456	5,398,891
Bachelor's / Bachelor's with Exp. / Master's	404,129	810,726	39,084	92,095	4,733,812	12,063,122
PhD / Professional Degree	14,058	78,238	1,511	7,281	280,575	1,157,920
Not Available	397,836	2,274,521	37,087	261,354	4,824,668	33,099,217
Total Employment by Sector	1,253,007	6,600,029	118,477	754,040	15,227,108	96,059,301
Percent Employment by Sector	16.0%	84.0%	13.6%	86.4%	13.7%	86.3%
Total Employment	**7,853,036**		**872,516**		**111,286,408**	

** States to which the Wyoming population is most likely to migrate.*

Note: Data in Table 6-2 were generated by combining the Bureau of Labor Statistics's "1998 Covered Employment and Wages" with the "Industrial Occupational Staffing Patterns" and the Bureau of Labor Statistics's Typical Education/Experience Level available at http://stats.bls.gov/asp/oep/noeted/empnumb.asp.

It is also important to note that the total employment in Wyoming in Table 6-2 is lower than the total employment shown in ES-202, published as ***Wyoming 1998 Covered Employment and Wages*** by R&P. To maintain consistency of the data from state to state, national covered employment and wages data[21] provided by BLS were used. The BLS data contain entries where employment and wages are suppressed due to confidentiality. Employment for suppressed data was counted as zero; therefore, when summed, the total will not equal actual total employment. We compared the results generated from the BLS data with the micro-level data of Wyoming's ES-202 database, and they were proportionally similar.

Table 6-3a shows for Wyoming, destination states, and the nation the percent of employment in private sector industry for each typical education/experience level. For example, referring to Table 6-2, we know that there were 27,456 individuals in Wyoming employed in occupations typically requiring a Bachelor's, Bachelor's with Experience, or a Master's degree. Of these, 16,327 (or 59.5 %) were employed in the private sector. Wyoming shows the lowest percent of private sector employment across all education/experience levels. For example, the percent of private sector employment in Wyoming for occupations requiring a Bachelor's to Master's degree is 59.5 percent. In contrast, 73.0 percent of the employment for occupations requiring a Bachelor's to Master's degree in Colorado are in the private sector. This is not to say that private sector jobs in Wyoming are less likely to require Bachelor's to Master's level education, rather there are fewer opportunities for private sector employment utilizing an individual's advanced education.

Table 6-3b presents the difference between the destination states, the U.S., and Wyoming's private sector employment by education/experience level. For example, 13.5 percent more of the employment in occupations requiring a Bachelor's/Bachelor's with Experience/Master's are in the private sector in California (73.0%) than in Wyoming (59.5%).

Table 6-3a: Percent Employment in Private Sector Industry for Wyoming, Five Destination States,* and U.S. by Typical Education/Experience Levels, 1998

Aggregate Typical Education/Experience	Wyoming	California	Colorado	Montana	Texas	Utah	U.S.
On-the-Job-Training / Job Experience	85.6%	90.8%	91.1%	89.8%	88.7%	90.7%	90.5%
Post Secondary Training / Associate's Degree	70.6%	89.0%	87.9%	89.2%	88.6%	89.7%	88.0%
Bachelor's / Bachelor's with Exp. / Master's	59.5%	73.0%	72.1%	63.8%	66.7%	70.2%	71.8%
PhD / Professional Degree	60.8%	84.3%	75.5%	78.5%	84.8%	82.8%	80.5%
Not Available	81.2%	88.1%	87.0%	83.3%	85.1%	87.6%	87.3%

** States to which the Wyoming population is most likely to migrate.*

Table 6-3b: Percent Difference in Private Sector Employment Between Wyoming and Five Destination States,* and U.S. by Typical Education/Experience Levels, 1998

	Percent Above Wyoming					
Aggregate Typical Education/Experience	California	Colorado	Montana	Texas	Utah	U.S.
On-the-Job-Training / Job Experience	5.2%	5.5%	4.2%	3.1%	5.1%	4.9%
Post Secondary Training / Associate's Degree	18.4%	17.3%	18.6%	18.0%	19.1%	17.4%
Bachelor's / Bachelor's with Exp. / Master's	13.5%	12.6%	4.3%	7.2%	10.7%	12.3%
PhD / Professional Degree	23.5%	14.7%	17.7%	24.0%	22.0%	19.7%
Not Available	6.9%	5.8%	2.1%	3.9%	6.4%	6.1%

** States to which the Wyoming population is most likely to migrate.*

Note: Data in Table 6-3 was generated by combining Bureau of Labor Statistics's "1998 Covered Employment and Wages" with the "Industrial Occupational Staffing Patterns" and the Bureau of Labor Statistics's Typical Education/Experience Level available at http://stats.bls.gov/asp/oep/noeted/empnumb.asp.

Labor Demand, Wages, and Public-Private Sector Employment: Information Technology Occupations

This chapter and Chapters 3 and 5 demonstrated the following points. First, the demand for a highly skilled and educated workforce is growing faster in the U.S. than in Wyoming. Although the demand for labor over the next decade is greater in the U.S. than in Wyoming, Wyoming's need for skilled and

educated labor is still projected to increase. Secondly, when comparing wages by educational level of workers in the destination states and the U.S. to those in Wyoming, it becomes clear that Wyoming finds it hard to compete in terms of attracting talented labor via wages. Lastly, the lower proportion of private sector employment opportunities in Wyoming offers less diversity for career advancement than in the U.S. and destination states.

To illustrate how Wyoming, destination states, and the nation use labor differently and create different opportunity structures, we focus on Information Technology (IT), or computer related occupations. The OES codes from 25102 to 25199 include 16 occupations in the computer scientist and related workers group. Table 6-4 lists these IT occupations, and Table 6-5 shows employment, wage, and sector of employment information for Wyoming, destination states, and the nation.

Wyoming is projected to add 23.5 percent more IT workers from 1996 to 2006. California is expected to add 71.4 percent; Colorado – 93.1 percent; Montana – 20.0 percent; Texas – 56.2 percent; Utah – 32.0 percent; and the U.S. – 202.3 percent. With the exception of Montana, all other areas are projected to have a greater demand for IT workers from 1996 to 2006 than Wyoming.

Table 6-4: Information Technology Related Occupations (OES 25102-25199)

OES* Code	Occupational Title
25102	Systems Analysts, Electronic Data Processing
25103	Data Base Administrators
25104	Computer Support Specialists
25105	Computer Programmers
25108	Computer Programmer Aides
25111	Programmers, Numerical Tool and Process Control
25112	Systems Analysts, Electronic Data Processing, Non R&D
25113	Systems Analysts, Electronic Data Processing, R&D
25114	Data Base Administrators, Non R&D
25115	Data Base Administrators, R&D
25116	Computer Support Specialists, Non R&D
25117	Computer Support Specialists, R&D
25121	Computer Programmers, Non R&D
25122	Computer Programmers, R&D
25125	Computer Programmers / Systems Analysts
25199	All Other Computer Scientists

** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*

Table 6-5: Analysis Applying the Concepts Introduced in Chapters 3, 5, and 6 of All Information Technology Related Occupations (OES 25102-25199)

	Covered in Chapter 3				Covered in Chapter 5		Covered in Chapter 6	
Area	1996* Employment (Base)	2006* Employment (Projected)	Net Employment Change	Percent Employment Change	Mean Wage 1998	Mean Wage Compared to Wyoming 1998	Percent Private Sector 1998	Percent Private Sector Compared to Wyoming 1998
Wyoming	850	1,050	200	23.5%	$16.25		73.0%	
Destination States								
California	135,450	232,100	96,650	71.4%	$24.11	+48.4%	89.7%	+16.7%
Colorado	26,800	51,750	24,950	93.1%	$26.13	+60.8 %	87.0%	+14.0%
Montana	2,000	2,400	400	20.0%	$17.30	+6.4%	76.7%	+3.7%
Texas	82,400	128,700	46,300	56.2%	$23.18	+42.6%	88.8%	+15.8%
Utah	13,750	18,150	4,400	32.0%	$20.08	+23.6%	89.3%	+16.3%
Nationally								
U.S.	724,518	2,190,400	1,465,882	202.3%	$23.72	+45.9%	87.1%	+14.1%

** Other states' current (2008) projections are not available.*

Table 6-5 also provides evidence that Wyoming will have a hard time competing for IT workers, based on wages. All of the destination states and the nation pay higher average hourly wages for IT related occupations than Wyoming. Further, with the exception of Wyoming, the greater the projected percent change (demand) in employment for IT occupations, the higher the hourly rate of compensation (wages). For example, Colorado has the greatest projected demand for IT occupations and the highest average hourly wage, followed by California (second greatest demand and correspondingly the second highest wage).

Lastly, Table 6-5 demonstrates that Wyoming has less IT employment in the private sector than the other geographic areas. The economy in Wyoming offers fewer opportunities to move from public sector employment to private sector employment, where wages are generally higher for this highly technical occupational group.

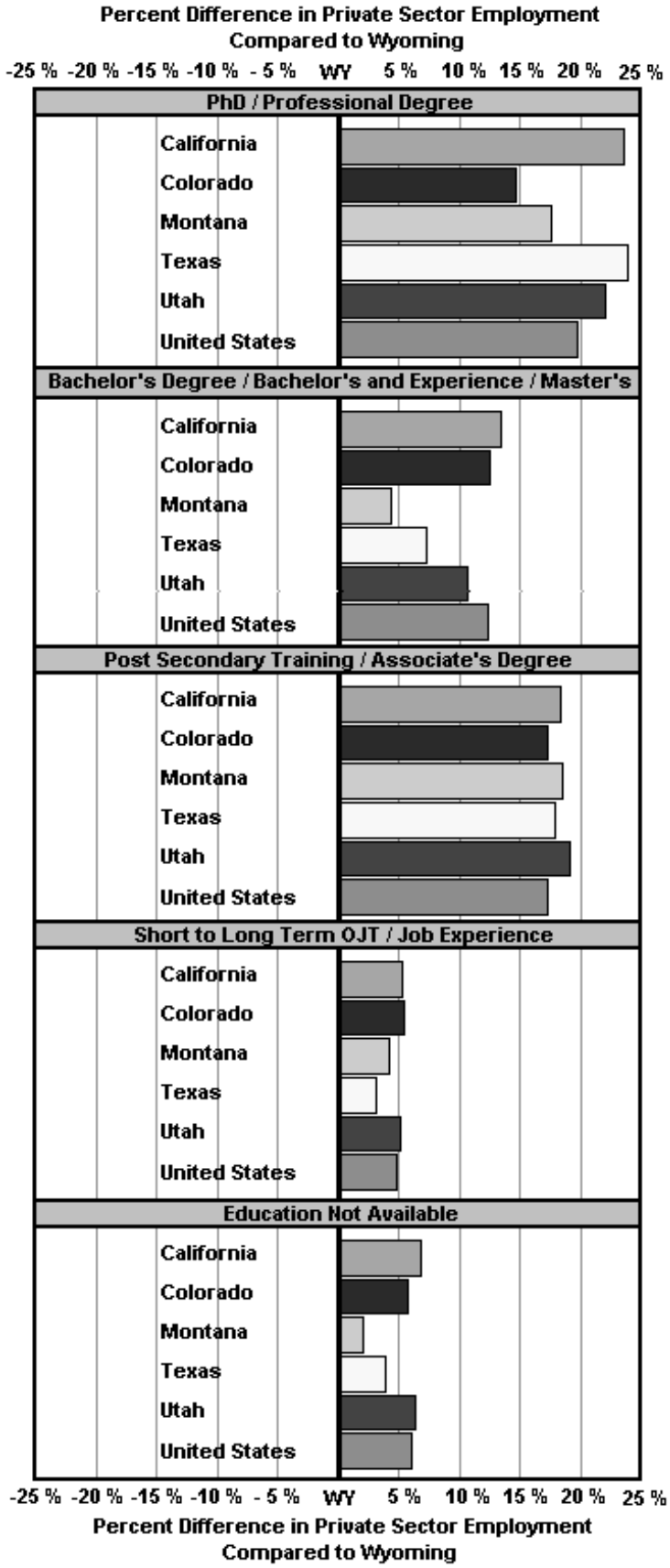
In a recent report for Wyoming's Legislative Services Office (LSO)[22]– (see Appendix H), R&P demonstrated that of the IT professionals who left employment with Wyoming state government, 66.3 percent were not employed in Wyoming the first quarter following departure and quite likely left the state. Of those who remained in Wyoming, 50.0 percent were found working for private sector industry. Two quarters following departure from state government, those who remained in Wyoming had increased their earnings by 11.0 percent per quarter.

Conclusions

Figure 6-1 (see page 63), created from the data in Table 6-3b (see page 60), shows the percent difference in private sector employment by education/experience level between Wyoming, destination states, and the U.S. For those occupations requiring education beyond work related experience, there are more opportunities for private sector employment in the destination states and the nation than in Wyoming.

As mentioned in the introduction to this chapter, the article from the *Monthly Labor Review* found that among white-collar workers, as duties and responsibilities increased, so did wages. It further stated that as duties and responsibilities increased, the private sector paid increasingly better wages. Lastly, the pay associated with jobs in the public sector lagged far behind that of the private sector for professional and administrative positions. Since the bulk of Wyoming's projected job growth occurs in few administrative and professional occupations requiring high educational levels, Wyoming industries — but the public sector, in particular — may find it increasingly more difficult and costly to attract and retain highly educated workers. The problem is compounded in Wyoming, particularly in the example of IT professionals, where the private sector (local competition) pays slightly higher wages than government. Moreover, all Wyoming firms, public or private, face significant competition for labor, particularly in the form of higher wages offered in destination states and the nation.

Figure 6-1: Percent Difference in Private Sector Employment, Comparing Wyoming to Five Destination States* and U.S. by Typical Education/Experience Levels, 1998



** States to which the Wyoming population is most likely to migrate.*

Appendixes

Appendix A

Technical Appendix Chapter 1

Section 1-a.

Identifying and providing summary reports of occupations, educational and experience levels, residency, levels of attachment to the labor market (e.g., steady employment for a single employer, multiple job holding), commuting patterns, and other characteristics or behaviors of individuals is possible, but more problematic than providing characteristics such as age, gender, and earnings levels.

One way Research & Planning (R&P) plans to meet our clients' needs for various workforce information is through the Wyoming Workforce Information System (WYWINS). WYWINS is a map-driven, Internet database of demographic and labor market information, representing Wyoming's contribution to America's Labor Market Information System (ALMIS). ALMIS is a federal initiative attempting to create an interstate network of localized labor market information. Each state compiles information on labor demand and supply in standard formats to facilitate data sharing and support local, regional, and national economic and workforce development. The database includes access to a comprehensive directory of Wyoming employers that can be searched according to industry, size of business, and zip code among other criteria. Once it is released, a link to WYWINS will initially be available at http://lmi.state.wy.us.

Section 1-b.

There are several possible explanations for missing demographics. Agriculture's employees, for example, may be less likely to use employment services than employees of other industries, due to physical distance from employment centers. Thus, their demographic data would not be part of the Employment Services databases. This may change as governmental services increasingly reach people in their homes, local libraries, and elsewhere through the Internet. Many young people, particularly those who are school aged and are new participants in the labor market, may not have earned their driver's licenses yet. Demographic data would therefore not be available through the Driver's License database on these individuals, many of whom hold their first jobs in the Retail Trade industry (e.g., fast food restaurants). The Construction and Services industries employ many contract workers holding out-of-state driver's licenses. If workers have not filed for UI claims or registered with Employment Services in Wyoming, we are less likely to have demographic information on them.

Technical Appendix Chapter 3

Where do Occupational Projections Come From?

Occupational projections are derived from Industry projections and data collected for the Occupational Employment Statistics (OES) survey. Industry projections use historical trends in employment within an industry to predict whether the industry is expected to expand or contract over the next decade. OES collects data at the establishment level on the number of employees in an occupation within an industry. Table 3-1 (see page 40) is an example of how the two sets of data combine to produce the occupational projections. Table 3-8 (see page A-2) shows a complete listing of Wyoming's occupational projections.

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
49011	Salespersons, Retail	6,400	7,852	22.7%	1,452	$7.88	$9.13	15.9%	Short-term on-the-job
32502	Registered Nurses	3,419	4,314	26.2%	895	$16.74	$20.71	23.7%	Associate's degree
49023	Cashiers	5,734	6,550	14.2%	816	$6.95	$7.32	5.3%	Short-term on-the-job
31308	Teachers, Secondary School	3,908	4,508	15.4%	600	N/A	N/A	N/A	Bachelor's degree
65038	Food Preparation Workers	3,344	3,852	15.2%	508	$6.39	$7.10	11.1%	Short-term on-the-job
19005	General Managers and Top Executives	6,100	6,568	7.7%	468	$21.92	$30.08	37.2%	Work exp., plus a bach
87102	Carpenters	1,927	2,357	22.3%	430	$13.73	$15.20	10.7%	N/A
85132	Maintenance Repairers, General Utility	3,409	3,786	11.1%	377	$12.49	$12.11	-3.0%	Long-term on-the-job t
65026	Cooks, Restaurant	2,325	2,697	16.0%	372	$7.39	$8.31	12.4%	Long-term on-the-job t
87202	Electricians	1,316	1,628	23.7%	312	$16.75	$18.05	7.8%	Long-term on-the-job t
67005	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	4,100	4,402	7.4%	302	$7.82	$8.45	8.1%	N/A
13002	Financial Managers	1,551	1,828	17.9%	277	$23.90	$28.56	19.5%	Work exp., plus a bach
41002	First-Line Supervisors and Managers - Sales and Related Workers	3,056	3,312	8.4%	256	$13.60	$17.30	27.2%	Work exp. in related o
98999	All Other Helpers, Laborers, and Material Movers, Hand	2,428	2,681	10.4%	253	$8.49	$9.65	13.7%	N/A
81005	First-Line Supervisors and Managers - Const. Trades & Extractive Workers	1,526	1,763	15.5%	237	$20.12	$20.34	1.1%	N/A
65041	Combined Food Preparation and Service Workers	2,641	2,862	8.4%	221	$5.78	$6.41	10.9%	N/A
65008	Waiters and Waitresses	5,520	5,739	4.0%	219	$5.74	$6.13	6.8%	Short-term on-the-job
15026	Food Service and Lodging Managers	978	1,182	20.9%	204	$11.05	$14.12	27.8%	Work exp. in related o
97105	Truck Drivers, Light, Include Delivery and Route Workers	2,104	2,294	9.0%	190	$9.97	$10.59	6.2%	N/A
49021	Stock Clerks, Sales Floor	2,202	2,389	8.5%	187	$7.14	$8.01	12.2%	N/A
87311	Concrete and Terrazzo Finishers	495	661	33.5%	166	$11.33	$13.82	22.0%	Long-term on-the-job t
27307	Residential Counselors	585	750	28.2%	165	$8.13	$9.86	21.3%	Bachelor's degree
87502	Plumbers, Pipefitters, and Steamfitters	725	888	22.5%	163	$15.91	$18.00	13.1%	Long-term on-the-job t
87917	Service Unit Operators	1,043	1,204	15.4%	161	$11.85	$11.94	0.8%	N/A
32505	Licensed Practical Nurses	900	1,060	17.8%	160	$10.99	$13.48	22.7%	Post secondary vocatio
49999	All Other Sales and Related Workers	1,229	1,388	12.9%	159	$7.96	$13.10	64.6%	N/A
85302	Automotive Mechanics	1,326	1,485	12.0%	159	$12.25	$13.97	14.0%	Post secondary vocatio
92935	Chemical Equipment Controllers and Operators	392	542	38.3%	150	N/A	$15.97	N/A	N/A
68038	Child Care Workers	759	904	19.1%	145	$6.04	$7.13	18.0%	Short-term on-the-job
15017	Construction Managers	622	764	22.8%	142	$20.02	$24.96	24.7%	Bachelor's degree
53314	Insurance Policy Processing Clerks	320	455	42.2%	135	$9.07	$12.02	32.5%	Moderate-term on-the
65005	Bartenders	1,409	1,543	9.5%	134	$6.66	$6.83	2.6%	Short-term on-the-job
65099	All Other Food Service Workers	615	748	21.6%	133	$6.67	$7.68	15.1%	N/A
65002	Hosts and Hostesses, Restaurant, Lounge, or Coffee Shop	550	680	23.6%	130	$6.29	$6.90	9.7%	Short-term on-the-job
25102	Systems Analysts, Electronic Data Processing	181	310	71.3%	129	$19.53	$26.02	33.2%	Bachelor's degree
65032	Cooks, Fast Food	1,308	1,437	9.9%	129	$6.16	$6.31	2.4%	N/A
32102	Physicians and Surgeons	535	661	23.6%	126	$50.58	$49.05	-3.0%	First professional degre
53121	Loan and Credit Clerks	283	405	43.1%	122	$9.12	$11.45	25.5%	Short-term on-the-job
27302	Social Workers, Medical and Psychiatric	882	1,004	13.8%	122	$14.63	$16.39	12.0%	N/A
31302	Teachers, Preschool/Kindergarten	403	520	29.0%	117	N/A	N/A	N/A	N/A
61099	All Other Supervisors and Managers/Supervisors - Service Workers	1,554	1,671	7.5%	117	$10.78	$12.71	17.9%	N/A
87402	Painters and Paperhangers, Construction, and Maintenance	385	499	29.6%	114	$11.26	$13.45	19.4%	Moderate-term on-the

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
25108	Computer Programmer Aides	167	280	67.7%	113	$9.52	$15.35	61.2%	N/A
79041	Laborers, Landscaping and Groundskeeping	413	525	27.1%	112	$8.05	$9.22	14.5%	Short-term on-the-job
27308	Human Services Workers	347	455	31.1%	108	$8.63	$10.93	26.7%	Moderate-term on-the
13011	Marketing, Advertising, and Public Relations Managers	451	559	23.9%	108	$18.64	$28.85	54.8%	Work exp., plus a bach
68014	Amusement and Recreation Attendants	630	738	17.1%	108	$6.58	$6.86	4.3%	Short-term on-the-job
32508	Emergency Medical Technicians	366	472	29.0%	106	$8.01	$10.75	34.2%	Post secondary vocatio
19999	All Other Managers and Administrators	1,075	1,181	9.9%	106	$20.88	$25.54	22.3%	N/A
92726	Laundry and Dry-Cleaning Machine Operators, Except Pressing	344	449	30.5%	105	$6.98	$7.45	6.7%	Moderate-term on-the
49017	Counter and Rental Clerks	705	803	13.9%	98	$6.77	$7.77	14.8%	Short-term on-the-job
98902	Hand Packers and Packagers	906	1,004	10.8%	98	$6.39	$7.59	18.8%	Short-term on-the-job
95008	Chemical Plant and System Operators	233	330	41.6%	97	N/A	$18.75	N/A	Long-term on-the-job t
79030	Gardeners & Groundskeepers, Except Farm	394	485	23.1%	91	N/A	N/A	N/A	N/A
49008	Sales Reps, Except Retail, Scientific, and Related Products and Services	1,069	1,160	8.5%	91	$16.36	$20.23	23.7%	N/A
97117	Driver/Sales Workers	763	853	11.8%	90	$9.30	$10.34	11.2%	Short-term on-the-job
63047	Guards and Watch Guards	544	630	15.8%	86	$8.43	$8.61	2.1%	Short-term on-the-job
13017	Engineering, Mathematical, and Natural Sciences Managers	329	414	25.8%	85	$29.14	$34.54	18.5%	Work exp., plus a bach
21114	Accountants and Auditors	1,315	1,400	6.5%	85	$17.22	$20.13	16.9%	Bachelor's degree
32302	Respiratory Therapists	143	227	58.7%	84	$14.65	$17.14	17.0%	Associate's degree
97702	Aircraft Pilots and Flight Engineers	209	293	40.2%	84	N/A	N/A	N/A	Bachelor's degree
98799	All Other Freight, Stock, and Material Movers, Hand	789	873	10.6%	84	$8.45	$9.51	12.5%	N/A
65017	Counter Attendants - Lunchroom, Coffee Shop, or Cafeteria	936	1,019	8.9%	83	$6.35	$6.59	3.8%	N/A
97938	Grader, Bulldozer, and Scraper Operators	817	898	9.9%	81	$15.28	$14.32	-6.3%	Moderate-term on-the
93914	Welders and Cutters	1,003	1,083	8.0%	80	$15.04	$13.18	-12.4%	Long-term on-the-job t
93956	Assemblers & Fabricators, Ex. Machine, Electrical, Electronic, & Precision	612	689	12.6%	77	$9.64	$10.54	9.3%	N/A
58011	Transportation Agents	187	263	40.6%	76	$10.20	$12.39	21.5%	N/A
87808	Roofers	241	317	31.5%	76	$11.78	$13.63	15.7%	Moderate-term on-the
15008	Medicine and Health Services Managers	415	491	18.3%	76	$22.09	$25.17	13.9%	Work exp., plus a bach
49014	Salespersons, Parts	657	731	11.3%	74	$10.35	$12.14	17.3%	Moderate-term on-the
53123	Adjustment Clerks	270	340	25.9%	70	$8.70	$11.18	28.5%	Short-term on-the-job
39999	All Other Professional, Paraprofessional, and Technical Workers	743	813	9.4%	70	$16.33	$19.62	20.1%	N/A
98312	Helpers, Carpenters, and Related Workers	642	708	10.3%	66	$9.46	$10.08	6.6%	N/A
85953	Tire Repairers and Changers	358	423	18.2%	65	$9.64	$8.59	-10.9%	Short-term on-the-job
87302	Brickmasons	160	224	40.0%	64	$16.73	$17.81	6.5%	N/A
32908	Dental Hygienists	243	307	26.3%	64	$19.60	$22.39	14.2%	Associate's degree
85123	Millwrights	243	303	24.7%	60	$17.56	$17.97	2.3%	Long-term on-the-job t
61008	Housekeeping Supervisors	355	415	16.9%	60	$8.30	$10.20	22.9%	Work exp. in related o
68005	Hairdressers, Hairstylists, and Cosmetologists	593	653	10.1%	60	$8.69	$8.56	-1.5%	Post secondary vocatio
58023	Stock Clerks - Stockroom, Warehouse, or Storage Yard	987	1,046	6.0%	59	$10.56	$10.03	-5.0%	N/A
87914	Derrick Operators, Oil and Gas Extraction	371	429	15.6%	58	$13.83	$13.81	-0.1%	N/A
32902	Medical and Clinical Laboratory Technologists	198	254	28.3%	56	$16.70	$18.36	9.9%	N/A
13014	Administrative Services Managers	510	566	11.0%	56	$19.60	$23.70	20.9%	Work exp., plus a bach
27305	Social Workers, Except Medical and Psychiatric	617	671	8.8%	54	$13.45	$15.52	15.4%	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
28108	Lawyers	712	765	7.4%	53	$23.90	$36.49	52.7%	First professional degre
87817	Fence Erectors	170	222	30.6%	52	$9.96	$10.33	3.7%	N/A
68035	Personal and Home Care Aides	176	228	29.5%	52	$6.62	$7.51	13.4%	N/A
22121	Civil Engineers, Including Traffic	352	404	14.8%	52	$21.46	$26.28	22.5%	Bachelor's degree
85305	Automotive Body and Related Repairers	446	498	11.7%	52	$12.80	$14.34	12.0%	Long-term on-the-job t
32308	Physical Therapists	214	265	23.8%	51	$26.49	$27.49	3.8%	Master's degree
97805	Service Station Attendants	456	507	11.2%	51	$6.26	$7.34	17.3%	Short-term on-the-job
32911	Medical Records Technicians	186	236	26.9%	50	$9.79	$10.57	8.0%	Associate's degree
21902	Cost Estimators	204	254	24.5%	50	$19.49	$21.11	8.3%	Bachelor's degree
63099	All Other Protective Service Workers	477	527	10.5%	50	$8.78	$9.83	12.0%	Short-term on-the-job
43002	Sales Agents and Placers, Insurance	294	343	16.7%	49	$18.37	$20.61	12.2%	Bachelor's degree
98319	Helpers, All Other Construction Trades Workers	482	531	10.2%	49	$8.59	$10.41	21.2%	N/A
87921	Roustabouts	904	952	5.3%	48	$12.60	$10.40	-17.5%	Short-term on-the-job
65021	Bakers, Bread and Pastry	455	502	10.3%	47	$7.74	$8.84	14.2%	Moderate-term on-the
32105	Dentists	139	184	32.4%	45	$38.46	$44.40	15.4%	First professional degre
43014	Sales Agents, Securities, Commodities, and Financial Services	173	218	26.0%	45	$29.38	$29.70	1.1%	Bachelor's degree
97911	Wellhead Pumpers	285	330	15.8%	45	$15.78	$15.81	0.2%	N/A
13005	Personnel, Training, and Labor Relations Managers	317	362	14.2%	45	$22.27	$25.10	12.7%	Work exp., plus a bach
85110	Machinery Maintenance Mechanics	377	422	11.9%	45	$16.10	$15.69	-2.5%	N/A
53302	Insurance Adjusters, Examiners, and Investigators	79	123	55.7%	44	$17.97	$19.54	8.7%	Long-term on-the-job t
92908	Photographic Processing Machine Operators and Tenders	87	131	50.6%	44	$6.27	$9.58	52.8%	Short-term on-the-job
32919	Radiologic Technologists	217	261	20.3%	44	$13.81	$16.51	19.6%	Associate's degree
79021	Farm Equipment Operators	397	441	11.1%	44	N/A	$8.23	N/A	N/A
97923	Excavating and Loading Machine Operators	472	516	9.3%	44	$14.18	$14.44	1.8%	Moderate-term on-the
53117	Credit Checkers	112	155	38.4%	43	N/A	$11.29	N/A	Short-term on-the-job
87814	Structural Metal Workers	157	200	27.4%	43	$14.07	$17.09	21.5%	N/A
97108	Bus Drivers	380	423	11.3%	43	$8.84	$12.50	41.4%	Moderate-term on-the
31521	Teacher Aides, Paraprofessional	1,371	1,414	3.1%	43	$7.10	$8.22	15.8%	N/A
87602	Carpet Installers	112	154	37.5%	42	$10.75	$14.81	37.8%	Moderate-term on-the
49026	Telemarketers, Door-To-Door, News & Street Vendors, & Related Workers	207	249	20.3%	42	$8.13	$9.40	15.6%	N/A
43099	All Other Sales Representatives and Salespersons, Services	149	190	27.5%	41	N/A	$16.38	N/A	N/A
87711	Highway Maintenance Workers	722	763	5.7%	41	$11.63	$12.40	6.6%	Short-term on-the-job
32951	Veterinary Technicians and Technologists	83	123	48.2%	40	$8.22	$9.87	20.1%	Associate's degree
27311	Recreation Workers	468	508	8.5%	40	$7.78	$9.16	17.7%	Bachelor's degree
74002	Farm Workers, Except Agricultural Services	380	419	10.3%	39	N/A	N/A	N/A	N/A
24105	Chemists, Except Biochemists	129	167	29.5%	38	$19.50	$23.80	22.1%	Bachelor's degree
92974	Packaging and Filling Machine Operators and Tenders	169	207	22.5%	38	$11.03	$10.44	-5.3%	Moderate-term on-the
24505	Chemical Technicians and Technologists, Except Health	255	293	14.9%	38	$14.39	$15.85	10.1%	N/A
87811	Glaziers	140	177	26.4%	37	$9.48	$13.95	47.2%	Long-term on-the-job t
87911	Rotary Drill Operators, Oil and Gas Extraction	233	269	15.5%	36	$24.11	$17.58	-27.1%	N/A
97908	Oil Pumpers, Except Wellhead	231	266	15.2%	35	N/A	$15.47	N/A	N/A
97947	Industrial Truck and Tractor Operators	422	457	8.3%	35	$14.10	$12.08	-14.3%	Short-term on-the-job

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
98102	Helpers, Mechanics, and Repairers	618	653	5.7%	35	$9.88	$9.73	-1.5%	N/A
98311	Helpers, Brick and Stonemasons, and Hard Tile Setters	195	229	17.4%	34	$9.87	$11.67	18.2%	N/A
34035	Artists and Related Workers	93	126	35.5%	33	$11.91	$17.21	44.5%	Work exp., plus a bach
22521	Surveying and Mapping Technicians	213	246	15.5%	33	$12.81	$13.68	6.8%	Moderate-term on-the
32905	Medical and Clinical Laboratory Technicians	140	172	22.9%	32	$13.45	$13.38	-0.5%	N/A
22311	Surveyors and Mapping Scientists	188	220	17.0%	32	$18.45	$19.77	7.2%	Bachelor's degree
49005	Sales Reps, Scientific and Related Products and Services, Except Retail	296	328	10.8%	32	$21.38	$24.28	13.6%	N/A
85702	Telephone and Cable Television Line Installers and Repairers	401	433	8.0%	32	$14.14	$16.56	17.1%	Long-term on-the-job t
65035	Cooks, Short Order	482	514	6.6%	32	$6.78	$7.29	7.5%	N/A
28302	Law Clerks	83	114	37.3%	31	$12.36	$13.88	12.3%	N/A
28305	Paralegal Personnel	107	138	29.0%	31	$11.57	$16.79	45.1%	Associate's degree
15011	Property and Real Estate Managers and Administrators	149	179	20.1%	30	$11.80	$17.29	46.5%	Bachelor's degree
98315	Helpers, Plumbers, Pipefitters, and Steamfitters	205	235	14.6%	30	$8.98	$10.11	12.6%	N/A
95005	Gas Plant Operators	321	351	9.3%	30	$20.00	$19.31	-3.5%	N/A
89132	Sheet Metal Workers	180	209	16.1%	29	$12.15	$15.23	25.3%	N/A
53508	Bill and Account Collectors	229	258	12.7%	29	$10.56	$11.32	7.2%	Short-term on-the-job
21511	Personnel, Training, and Labor Relations Specialists	302	331	9.6%	29	N/A	$19.47	N/A	Bachelor's degree
22502	Civil Engineering Technicians and Technologists	106	134	26.4%	28	$14.62	$17.34	18.6%	N/A
79017	Animal Caretakers, Except Farm	163	191	17.2%	28	$6.71	$7.83	16.7%	Short-term on-the-job
91714	Metal Fabricators, Structural Metal Products	88	115	30.7%	27	$13.91	$12.45	-10.5%	Moderate-term on-the
87108	Drywall Installers	104	131	26.0%	27	$14.26	$15.50	8.7%	N/A
87989	All Other Extractive Workers, Except Helpers	527	554	5.1%	27	$16.45	$15.05	-8.5%	N/A
91905	Plastic Molding and Casting Machine Operators and Tenders	52	78	50.0%	26	$6.56	$8.99	37.0%	N/A
55302	Stenographers and/or Court Reporters	73	99	35.6%	26	$12.66	$13.10	3.5%	Post secondary vocatio
32114	Veterinarians and Veterinary Inspectors	83	109	31.3%	26	$23.11	$27.47	18.9%	First professional degre
97953	Pump Operators	98	124	26.5%	26	$17.27	$15.78	-8.6%	N/A
21111	Tax Preparers	148	173	16.9%	25	$12.26	$15.56	26.9%	Moderate-term on-the
21308	Purchasing Agents, Except Wholesale, Retail, and Farm Products	306	331	8.2%	25	$19.02	$19.87	4.5%	Bachelor's degree
97999	Other Transportation and Material-Moving Equipment Operators	537	562	4.7%	25	$17.00	$12.72	-25.2%	N/A
25103	Data Base Administrators	33	57	72.7%	24	$20.25	$24.28	19.9%	Bachelor's degree
98313	Helpers, Electricians, and Power-Line Transmission Installers	135	159	17.8%	24	$10.36	$10.10	-2.5%	N/A
24111	Geologists, Geophysicists, and Oceanographers	215	239	11.2%	24	$25.96	$27.50	5.9%	Bachelor's degree
49032	Demos, Promoters, Models	77	100	29.9%	23	N/A	N/A	N/A	N/A
22126	Electrical and Electronic Engineers	77	100	29.9%	23	$23.83	$28.69	20.4%	Bachelor's degree
79806	Veterinary Assistants	78	101	29.5%	23	$8.00	$8.11	1.4%	Short-term on-the-job
55323	Order Clerks, Materials, Merchandise, and Service	205	228	11.2%	23	$10.95	$10.99	0.4%	Short-term on-the-job
59999	All Other Clerical and Administrative Support Workers	866	889	2.7%	23	$9.76	$11.65	19.4%	N/A
32523	Dietetic Technicians	91	113	24.2%	22	$8.81	$10.18	15.6%	N/A
62051	Cleaners/Servants, Private	160	182	13.8%	22	N/A	N/A	N/A	N/A
98905	Vehicle Washers and Equipment Cleaners	270	292	8.1%	22	$6.34	$7.72	21.8%	Short-term on-the-job
32517	Pharmacists	359	381	6.1%	22	$25.80	$28.89	12.0%	First professional degre
97956	Operating Engineers	573	595	3.8%	22	$15.65	$18.07	15.5%	Moderate-term on-the

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
91502	Numerical Control Machine Tool Operators, Metal and Plastic	37	58	56.8%	21	N/A	$13.52	N/A	Moderate-term on-the
85705	Data Processing Equipment Repairers	72	93	29.2%	21	$10.85	$15.15	39.6%	Post secondary vocatic
32928	Surgical Technologists and Technicians	74	94	27.0%	20	$10.04	$12.76	27.1%	Post secondary vocatic
43017	Sales Agents, Selected Business Services	98	118	20.4%	20	$11.67	$19.35	65.8%	N/A
43008	Sales Agents, Real Estate	113	133	17.7%	20	$18.46	$17.92	-2.9%	Post secondary vocatic
15014	Industrial Production Managers	161	181	12.4%	20	$19.82	$27.79	40.2%	Bachelor's degree
22111	Petroleum Engineers	209	229	9.6%	20	$30.50	$33.70	10.5%	Bachelor's degree
34023	Photographers	83	102	22.9%	19	$9.30	$12.25	31.7%	Post secondary vocatic
22505	Electrical and Electronic Engineering Technicians & Technologists	219	238	8.7%	19	$13.57	$18.32	35.0%	Associate's degree
85902	Heating, Air Conditioning, & Refrigeration Mechanics & Installers	209	228	9.1%	19	$16.16	$14.88	-7.9%	Long-term on-the-job t
31514	Vocational and Educational Counselors	345	364	5.5%	19	$16.44	$19.51	18.7%	Master's degree
55102	Legal Secretaries	348	367	5.5%	19	$10.16	$14.90	46.7%	Post secondary vocatic
32996	Health Program Coordinators, NEC	76	94	23.7%	18	N/A	N/A	N/A	N/A
24511	Petroleum Technicians and Technologists	99	117	18.2%	18	$17.66	$20.13	14.0%	N/A
43021	Travel Agents	131	149	13.7%	18	$9.49	$11.54	21.6%	Post secondary vocatic
71005	Farm Managers	180	198	10.0%	18	N/A	N/A	N/A	N/A
15021	Mining, Quarrying, and Oil and Gas Well Drilling Managers	218	236	8.3%	18	$32.12	$30.30	-5.7%	N/A
87802	Insulation Workers	234	252	7.7%	18	$10.96	$13.82	26.1%	Moderate-term on-the
81008	First-Line Supervisors and Managers - Production and Operating	336	354	5.4%	18	$20.16	$18.71	-7.2%	N/A
91911	Metal Molding, Coremaking, and Casting Machine Operators	46	63	37.0%	17	N/A	$12.86	N/A	N/A
21921	Claims Examiners, Property and Casualty Insurance	50	67	34.0%	17	N/A	$20.79	N/A	Bachelor's degree
92198	Other Metal & Plastic (Cut, Form, Fabricate, Process) Machine Oper.	59	76	28.8%	17	N/A	$11.37	N/A	N/A
32511	Physician Assistants	67	84	25.4%	17	$25.26	$22.48	-11.0%	Bachelor's degree
32514	Opticians, Dispensing and Measuring	149	166	11.4%	17	$10.89	$11.78	8.2%	Moderate-term on-the
87902	Earth Drillers, Except Oil and Gas	217	234	7.8%	17	$18.65	$14.54	-22.0%	N/A
58028	Shipping, Receiving, and Traffic Clerks	750	767	2.3%	17	$12.30	$11.65	-5.3%	Short-term on-the-job
53311	Insurance Claims Clerks	43	59	37.2%	16	$10.15	$11.95	17.7%	Moderate-term on-the
87305	Stonemasons	50	66	32.0%	16	N/A	$16.44	N/A	N/A
83008	Transportation Inspectors	50	66	32.0%	16	$18.16	$18.74	3.2%	N/A
87805	Sheet Metal Duct Installers	54	70	29.6%	16	$12.42	$15.63	25.8%	N/A
92717	Sewing Machine Operators, Garment	90	106	17.8%	16	$6.63	$7.45	12.4%	Moderate-term on-the
32305	Occupational Therapists	109	125	14.7%	16	$22.75	$24.65	8.4%	Bachelor's degree
85117	Underground Mine Machinery Mechanics	232	248	6.9%	16	$22.00	$18.44	-16.2%	N/A
69999	All Other Service Workers	504	520	3.2%	16	$8.70	$8.95	2.9%	N/A
28311	Title Examiners and Abstractors	39	54	38.5%	15	$11.74	$15.31	30.4%	N/A
91914	Foundry Mold Assembly and Shake-Out Workers	43	58	34.9%	15	N/A	$11.05	N/A	Moderate-term on-the
68023	Baggage Porters and Bellhops	60	75	25.0%	15	$6.11	$7.14	16.9%	Short-term on-the-job
32917	Radiologic Technologists	68	83	22.1%	15	N/A	N/A	N/A	N/A
93999	All Other Hand Workers	151	166	9.9%	15	$10.34	$9.49	-8.2%	N/A
55321	File Clerks	220	235	6.8%	15	$6.75	$8.64	28.0%	Short-term on-the-job
57311	Messengers	52	66	26.9%	14	$5.90	$8.59	45.6%	Short-term on-the-job
66098	Patient Service Workers, NEC	58	72	24.1%	14	N/A	N/A	N/A	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
53126	Statement Clerks	79	93	17.7%	14	N/A	$9.37	N/A	Short-term on-the-job
21905	Management Analysts	147	161	9.5%	14	$18.12	$25.95	43.2%	Work exp., plus a bach
97114	Taxi Drivers and Chauffeurs	163	177	8.6%	14	N/A	$8.30	N/A	Short-term on-the-job
49002	Sales Engineers	62	75	21.0%	13	$24.67	$27.51	11.5%	Bachelor's degree
62041	Child Care Workers, Private	120	133	10.8%	13	N/A	N/A	N/A	N/A
32521	Dietitians and Nutritionists	125	138	10.4%	13	$16.05	$17.36	8.2%	Bachelor's degree
27108	Psychologists	193	206	6.7%	13	$23.23	$24.82	6.8%	Master's degree
58005	Dispatchers, Except Police, Fire, and Ambulance	231	244	5.6%	13	$12.28	$13.80	12.4%	Moderate-term on-the
85999	All Other Mechanics, Installers, and Repairers	472	485	2.8%	13	$17.07	$14.55	-14.8%	N/A
53128	Brokerage Clerks	32	44	37.5%	12	$12.38	$14.45	16.7%	Moderate-term on-the
89505	Custom Tailors and Sewers	39	51	30.8%	12	N/A	$9.76	N/A	Work exp. in related o
87111	Tapers	45	57	26.7%	12	$13.78	$16.56	20.2%	N/A
68017	Guides	49	61	24.5%	12	$8.12	$8.26	1.7%	N/A
85938	Installers & Repairers, Mfg. Buildings, Mobile Homes, & Trailers	60	72	20.0%	12	$9.89	$10.81	9.3%	N/A
85947	Coin and Vending Machine Servicers and Repairers	64	76	18.8%	12	$9.53	$11.57	21.4%	Long-term on-the-job t
93953	Grinding and Polishing Workers, Hand	78	90	15.4%	12	$9.13	$10.70	17.2%	Short-term on-the-job
65023	Butchers and Meat Cutters	284	296	4.2%	12	$10.15	$11.48	13.1%	N/A
87708	Paving, Surfacing, and Tamping Equipment Operators	341	353	3.5%	12	$12.58	$13.14	4.5%	Moderate-term on-the
66011	Home Health Aides	460	472	2.6%	12	$7.63	$8.17	7.1%	N/A
21999	All Other Management Support Workers	349	361	3.4%	12	$16.29	$19.80	21.5%	N/A
87308	Hard Tile Setters	33	44	33.3%	11	N/A	$16.93	N/A	Long-term on-the-job t
87702	Air Hammer Operators	42	53	26.2%	11	N/A	$15.19	N/A	N/A
79033	Pruners	44	55	25.0%	11	N/A	$11.01	N/A	Short-term on-the-job
95017	Gaugers	71	82	15.5%	11	$23.15	$17.40	-24.8%	N/A
85905	Precision Instrument Repairers	133	144	8.3%	11	$20.24	$18.81	-7.1%	Long-term on-the-job t
92998	All Other Machine Operators and Tenders	202	213	5.4%	11	$14.05	$11.52	-18.0%	N/A
32999	All Other Health Professionals, Paraprofessionals, and Technicians	392	403	2.8%	11	$12.55	$15.40	22.7%	N/A
34041	Interior Designers	33	43	30.3%	10	$11.66	$17.34	48.7%	Bachelor's degree
71002	Farmers	35	45	28.6%	10	N/A	N/A	N/A	N/A
66097	Health Equipment Service Workers,NEC	44	54	22.7%	10	N/A	N/A	N/A	N/A
63035	Detectives and Investigators, Except Public	47	57	21.3%	10	$12.91	$12.17	-5.7%	Work exp. in related o
32931	Psychiatric Technicians	53	63	18.9%	10	N/A	$10.82	N/A	Post secondary vocatio
22135	Mechanical Engineers	116	126	8.6%	10	$24.63	$26.23	6.5%	Bachelor's degree
83005	Production Inspector, Tester, Grader, Sorter, Sampler, & Weigher	144	154	6.9%	10	$14.56	$11.72	-19.5%	N/A
57302	Mail Clerks, Except Mail Machine Operators and Postal Service	175	185	5.7%	10	$8.21	$9.02	9.9%	Short-term on-the-job
95099	All Other Plant and System Operators	374	384	2.7%	10	$18.13	$12.38	-31.7%	N/A
28308	Title Searchers	22	31	40.9%	9	$8.99	$12.49	38.9%	N/A
98314	Helpers, Painters, Paperhangers, Plasterers, and Stucco Masons	25	34	36.0%	9	$9.53	$9.74	2.2%	N/A
22127	Computer Engineers	26	35	34.6%	9	$23.21	$28.77	24.0%	Bachelor's degree
34051	Musicians, Instrumental	46	55	19.6%	9	N/A	N/A	N/A	N/A
32108	Optometrists	69	78	13.0%	9	$28.34	$31.47	11.0%	First professional degre
87605	Floor Layers, Except Carpet, Wood, and Hard Tiles	24	32	33.3%	8	N/A	$15.04	N/A	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
32921	Radiologic Technicians	28	36	28.6%	8	N/A	N/A	N/A	N/A
85799	Other Electrical & Electronic Equipment Mechanics and Installers	31	39	25.8%	8	$21.30	$16.17	-24.1%	N/A
21505	Special Agents, Insurance	37	45	21.6%	8	$13.32	$21.43	60.9%	N/A
85514	Radio Mechanics	36	44	22.2%	8	N/A	$15.46	N/A	Post secondary vocatic
15032	Lawn Service Managers	37	45	21.6%	8	$10.91	$13.56	24.3%	Work exp. in related o
43005	Brokers, Real Estate	36	44	22.2%	8	N/A	$26.07	N/A	Work exp. in related o
98316	Helpers, Roofers	42	50	19.0%	8	$8.73	$8.54	-2.2%	N/A
39011	Funeral Directors and Morticians	52	60	15.4%	8	$15.83	$19.26	21.7%	Associate's degree
21102	Insurance Underwriters	59	67	13.6%	8	$18.74	$20.42	9.0%	Bachelor's degree
21302	Wholesale and Retail Buyers, Except Farm Products	193	201	4.1%	8	$10.85	$17.31	59.5%	Bachelor's degree
13008	Purchasing Managers	497	505	1.6%	8	$14.33	$22.39	56.2%	Work exp., plus a bach
89135	Boilermakers	21	28	33.3%	7	N/A	$18.82	N/A	Long-term on-the-job t
21508	Employment Interviewers, Private or Public Employment	25	32	28.0%	7	$11.63	$17.63	51.6%	Bachelor's degree
79036	Sprayers/Applicators	27	34	25.9%	7	N/A	$10.65	N/A	Moderate-term on-the
24311	Medical Scientists	29	36	24.1%	7	N/A	$27.44	N/A	Doctoral degree
21105	Credit Analysts	57	64	12.3%	7	N/A	$19.19	N/A	Bachelor's degree
32317	Recreational Therapists	71	78	9.9%	7	$11.94	$13.98	17.1%	Bachelor's degree
85321	Farm Equipment Mechanics	77	84	9.1%	7	$12.06	$11.31	-6.2%	Long-term on-the-job t
27199	All Other Social Scientists	122	129	5.7%	7	$17.17	$20.82	21.3%	N/A
97989	All Other Material-Moving Equipment Operators	165	172	4.2%	7	$12.07	$12.27	1.7%	N/A
92962	Separating, Filtering, Clarifying, Precipitating, & Still Machine Oper.	229	236	3.1%	7	N/A	$14.87	N/A	Moderate-term on-the
24308	Biological Scientists	410	417	1.7%	7	$23.53	$24.04	2.2%	Doctoral degree
91508	Combination Machine Tool Operators, Metal and Plastic	8	14	75.0%	6	N/A	$11.08	N/A	N/A
91935	Furnace Operators and Tenders	10	16	60.0%	6	N/A	$13.28	N/A	Moderate-term on-the
87314	Reinforcing Metal Workers	16	22	37.5%	6	N/A	$17.36	N/A	N/A
92971	Extruding, Forming, Pressing, and Compacting Machine Operators	18	24	33.3%	6	$12.18	$11.41	-6.3%	N/A
32914	Nuclear Medicine Technologists	21	27	28.6%	6	N/A	$19.81	N/A	Associate's degree
32113	Chiropractors	21	27	28.6%	6	N/A	$32.41	N/A	First professional degre
85951	Bicycle Repairers	31	37	19.4%	6	N/A	$7.92	N/A	Moderate-term on-the
85711	Electric Home Appliance and Power Tool Repairers	39	45	15.4%	6	$14.42	$12.47	-13.5%	N/A
92512	Offset Lithographic Press Setters and Set-Up Operators	58	64	10.3%	6	N/A	$15.57	N/A	Moderate-term on-the
32518	Pharmacy Technicians	75	81	8.0%	6	N/A	N/A	N/A	N/A
83099	All Other Inspectors, Testers, and Related Workers	74	80	8.1%	6	$13.21	$12.52	-5.2%	N/A
92728	Pressing Machine Operators, Textile, Garment, & Related Materials	74	80	8.1%	6	$6.61	$7.52	13.8%	Moderate-term on-the
65011	Food Servers, Outside	91	97	6.6%	6	$7.17	$7.51	4.7%	N/A
21908	Construction and Building Inspectors	91	97	6.6%	6	$16.87	$18.69	10.8%	Work exp. in related o
81017	First-Line Supervisors/Managers - Helpers, Laborers, & Movers	150	156	4.0%	6	$17.43	$15.52	-11.0%	N/A
31321	Instructors and Coaches, Sports and Physical Training	637	643	0.9%	6	$11.45	$12.68	10.7%	Moderate-term on-the
25199	All Other Computer Scientists	5	10	100.0%	5	$14.28	$24.18	69.3%	Bachelor's degree
32926	Electrocardiograph Technicians	14	19	35.7%	5	N/A	$12.67	N/A	Moderate-term on-the
67008	Pest Controllers and Assistants	16	21	31.3%	5	N/A	$11.11	N/A	Moderate-term on-the
32998	Health Support Professions, NEC	21	26	23.8%	5	N/A	N/A	N/A	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
32913	Radiation Therapists	21	26	23.8%	5	N/A	$19.88	N/A	Associate's degree
22114	Chemical Engineers	22	27	22.7%	5	$28.66	$29.44	2.7%	Bachelor's degree
98323	Helpers, Extractive Workers	25	30	20.0%	5	$10.45	$10.46	0.1%	N/A
32925	Cardiology Technologists	25	30	20.0%	5	N/A	$17.44	N/A	Associate's degree
93944	Molders and Casters, Hand	26	31	19.2%	5	N/A	$9.85	N/A	N/A
85328	Small Engine Specialists	33	38	15.2%	5	N/A	$10.82	N/A	Long-term on-the-job t
24399	All Other Life Scientists	66	71	7.6%	5	N/A	$22.33	N/A	N/A
43011	Appraisers, Real Estate	64	69	7.8%	5	N/A	$21.32	N/A	Bachelor's degree
85926	Office Machine and Cash Register Servicers	61	66	8.2%	5	$11.36	$14.34	26.2%	Long-term on-the-job t
87899	All Other Construction Trades Workers	128	133	3.9%	5	$11.95	$13.52	13.1%	N/A
55307	Typists, Including Word Processing	352	357	1.4%	5	$7.97	$11.23	40.9%	Moderate-term on-the
85921	Musical Instrument Repairers and Tuners	7	11	57.1%	4	N/A	$12.00	N/A	Long-term on-the-job t
68026	Flight Attendants	9	13	44.4%	4	N/A	N/A	N/A	Long-term on-the-job t
85923	Locksmiths and Safe Repairers	9	13	44.4%	4	N/A	$12.81	N/A	Moderate-term on-the
34005	Technical Writers and Editors	11	15	36.4%	4	N/A	$21.25	N/A	N/A
93938	Meat, Poultry, and Fish Cutters and Trimmers, Hand	15	19	26.7%	4	$6.89	$7.99	16.0%	Short-term on-the-job
93947	Painting, Coating, and Decorating Workers, Hand	17	21	23.5%	4	N/A	$9.85	N/A	Short-term on-the-job
85714	Electric Motor, Transformer, and Related Repairers	41	45	9.8%	4	$13.02	$13.94	7.1%	N/A
24108	Atmospheric and Space Scientists	42	46	9.5%	4	$22.06	$25.71	16.5%	Bachelor's degree
85308	Motorcycle Repairers	45	49	8.9%	4	$11.57	$11.90	2.9%	Long-term on-the-job t
22511	Mechanical Engineering Technicians and Technologists	51	55	7.8%	4	$19.74	$19.84	0.5%	N/A
58099	Other Material Recording, Scheduling, and Distributing Workers	69	73	5.8%	4	$12.65	$11.67	-7.7%	N/A
79005	Nursery Workers	123	127	3.3%	4	N/A	N/A	N/A	N/A
97899	All Other Transportation and Related Workers	137	141	2.9%	4	$11.37	$12.92	13.6%	N/A
55332	Interviewing Clerks, Except Personnel and Social Welfare	115	119	3.5%	4	$8.17	$9.37	14.7%	Short-term on-the-job
22514	Drafters	283	287	1.4%	4	$13.53	$16.60	22.7%	N/A
92965	Crushing, Grinding, Mixing, and Blending Machine Operators	329	333	1.2%	4	$18.91	$11.92	-37.0%	Moderate-term on-the
85932	Elevator Installers and Repairers	4	7	75.0%	3	N/A	$24.00	N/A	Long-term on-the-job t
92197	Metal & Plastic (Cut, Form, Fabricate, Process) Machine Setters	6	9	50.0%	3	N/A	$13.24	N/A	N/A
91908	Metal Molding, Coremaking, & Casting Machine Setters & Operators	11	14	27.3%	3	N/A	$12.86	N/A	N/A
89902	Precision Foundry Mold and Coremakers	13	16	23.1%	3	N/A	$12.55	N/A	N/A
92953	Coating, Painting, and Spraying Machine Operators and Tenders	15	18	20.0%	3	N/A	$10.74	N/A	N/A
31511	Curators, Archivists, Museum Technicians, and Conservators	15	18	20.0%	3	$14.59	$16.80	15.1%	Master's degree
85908	Electromedical and Biomedical Equipment Repairers	16	19	18.8%	3	N/A	$16.54	N/A	Long-term on-the-job t
93908	Coil Winders, Tapers, and Finishers	18	21	16.7%	3	N/A	$9.80	N/A	Short-term on-the-job
68008	Manicurists	20	23	15.0%	3	N/A	$7.60	N/A	Post secondary vocatio
66021	Occupational Therapy Assistants and Aides	22	25	13.6%	3	N/A	$14.28	N/A	Associate's degree
85708	Electronic Home Entertainment Equipment Repairers	29	32	10.3%	3	N/A	$12.18	N/A	Post secondary vocatio
89517	Pressers, Delicate Fabrics	40	43	7.5%	3	N/A	$7.77	N/A	N/A
34028	Broadcast Technicians	52	55	5.8%	3	$8.42	$15.29	81.6%	Post secondary vocatio
22108	Mining Engineers, Including Mine Safety	142	145	2.1%	3	$27.48	$26.43	-3.8%	Bachelor's degree
85118	Machinery Maintenance Mechanics, Water or Power Plant	298	301	1.0%	3	N/A	$18.76	N/A	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
24302	Foresters and Conservation Scientists	269	272	1.1%	3	$21.37	$21.21	-0.7%	Bachelor's degree
32199	All Other Health Diagnosing and Treating Practitioners	4	6	50.0%	2	N/A	$24.37	N/A	N/A
93197	All Other Precision Assemblers	6	8	33.3%	2	N/A	$11.40	N/A	N/A
25315	Financial Analysts, Statistical	6	8	33.3%	2	$18.53	$26.07	40.7%	N/A
92997	All Other Machine Setters and Set-Up Operators	7	9	28.6%	2	$13.35	$12.85	-3.7%	N/A
92938	Chemical Equipment Tenders	7	9	28.6%	2	N/A	$14.14	N/A	N/A
22123	Agricultural Engineers	8	10	25.0%	2	N/A	$25.82	N/A	N/A
93921	Pressers, Hand	8	10	25.0%	2	$6.71	$7.33	9.2%	Short-term on-the-job
91705	Welding Machine Operators and Tenders	10	12	20.0%	2	$11.07	$12.51	13.0%	N/A
68011	Shampooers	10	12	20.0%	2	N/A	$6.47	N/A	Short-term on-the-job
93928	Portable Machine Cutters	11	13	18.2%	2	N/A	$9.18	N/A	N/A
89105	Precision Instrument Makers	13	15	15.4%	2	N/A	$14.79	N/A	N/A
89921	Precision Dental Laboratory Technicians	13	15	15.4%	2	N/A	$14.04	N/A	Long-term on-the-job t
25312	Statisticians	14	16	14.3%	2	N/A	$24.62	N/A	Master's degree
89808	Food Batchmakers	16	18	12.5%	2	N/A	$11.64	N/A	N/A
27502	Clergy	15	17	13.3%	2	N/A	$15.02	N/A	First professional degre
34044	Merchandise Displayers and Window Trimmers	16	18	12.5%	2	$7.40	$9.62	30.0%	Moderate-term on-the
89511	Shoe and Leather Workers and Repairers, Precision	22	24	9.1%	2	$7.96	$8.42	5.8%	Long-term on-the-job t
89514	Spotters, Dry-Cleaning	31	33	6.5%	2	N/A	$8.74	N/A	N/A
92941	Cutting and Slicing Machine Setters and Set-Up Operators	32	34	6.3%	2	N/A	$11.28	N/A	N/A
22132	Safety Engineers, Except Mining	31	33	6.5%	2	$29.55	$25.56	-13.5%	N/A
97944	Crane and Tower Operators	44	46	4.5%	2	$17.02	$15.46	-9.2%	Moderate-term on-the
92543	Printing Press Machine Operators and Tenders	69	71	2.9%	2	$10.88	$13.34	22.6%	N/A
39002	Airplane Dispatchers and Air Traffic Controllers	61	63	3.3%	2	N/A	$28.51	N/A	Long-term on-the-job t
85119	All Other Machinery Maintenance Mechanics	332	334	0.6%	2	$22.28	$18.11	-18.7%	N/A
43023	Sales Agents, Advertising	243	245	0.8%	2	$11.04	$18.85	70.7%	N/A
77011	Hunters & Trappers	2	3	50.0%	1	N/A	N/A	N/A	N/A
87114	Lathers	2	3	50.0%	1	N/A	$16.16	N/A	N/A
79856	Farmworkers, Food and Fiber Crops	3	4	33.3%	1	N/A	$6.41	N/A	N/A
97905	Tank Car and Truck Loaders	3	4	33.3%	1	N/A	$15.05	N/A	N/A
25313	Actuaries	3	4	33.3%	1	N/A	$31.86	N/A	Bachelor's degree
15031	Nursery and Greenhouse Managers	3	4	33.3%	1	N/A	$14.49	N/A	Work exp. in related o
34021	Announcers, Except Radio and Television	4	5	25.0%	1	N/A	$10.57	N/A	N/A
87317	Plasterers and Stucco Masons	4	5	25.0%	1	N/A	$15.34	N/A	Long-term on-the-job t
91114	Grind, Lap, & Buff Machine Tool Setters & Operators, Metal & Plastic	5	6	20.0%	1	N/A	$12.64	N/A	Moderate-term on-the
93905	Electrical and Electronic Assemblers	5	6	20.0%	1	N/A	$9.55	N/A	Short-term on-the-job
92968	Extrude, Form, Press, and Compact Machine Setters & Operators	6	7	16.7%	1	N/A	$12.21	N/A	N/A
93941	Metal Pourers and Casters, Basic Shapes	6	7	16.7%	1	N/A	$12.39	N/A	N/A
93108	Fitters, Structural Metal, Precision	7	8	14.3%	1	N/A	$13.41	N/A	Work exp. in related o
63005	Forest Fire Inspectors and Prevention Specialists	10	11	10.0%	1	N/A	$17.86	N/A	N/A
89721	Bookbinders	11	12	9.1%	1	N/A	$11.29	N/A	Moderate-term on-the
87105	Ceiling Tile Installers and Acoustical Carpenters	11	12	9.1%	1	N/A	$16.92	N/A	Moderate-term on-the

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
79011	Graders and Sorters, Agricultural Products	15	16	6.7%	1	N/A	$7.10	N/A	N/A
21305	Purchasing Agents and Buyers, Farm Products	14	15	7.1%	1	N/A	$17.55	N/A	Bachelor's degree
34026	Camera Operators, Television and Motion Picture	15	16	6.7%	1	N/A	$13.36	N/A	Moderate-term on-the
68041	Funeral Attendants	17	18	5.9%	1	$9.74	$7.98	-18.1%	N/A
85956	Menders, Garments, Linens, and Related	17	18	5.9%	1	N/A	$7.99	N/A	N/A
39014	Embalmers	18	19	5.6%	1	N/A	$14.76	N/A	N/A
89713	Camera Operators	16	17	6.3%	1	N/A	$12.63	N/A	Long-term on-the-job t
72008	Supervisors, Farm Workers	20	21	5.0%	1	N/A	N/A	N/A	N/A
87511	Septic Tank Servicers and Sewer Pipe Cleaners	22	23	4.5%	1	N/A	$13.36	N/A	N/A
89706	Paste-Up Workers	19	20	5.3%	1	N/A	$10.74	N/A	Long-term on-the-job t
89508	Upholsterers	19	20	5.3%	1	$11.86	$11.09	-6.5%	Long-term on-the-job t
68002	Barbers	19	20	5.3%	1	N/A	$10.05	N/A	Post secondary vocatic
58021	Marking Clerks	23	24	4.3%	1	N/A	$8.23	N/A	N/A
92921	Roasting, Baking, & Drying Machine Operators, Food & Tobacco	23	24	4.3%	1	N/A	$10.83	N/A	N/A
92525	Bindery Machine Setters and Set-Up Operators	25	26	4.0%	1	N/A	$12.39	N/A	N/A
27102	Economists, Including Market Research Analysts	24	25	4.2%	1	N/A	$25.58	N/A	Bachelor's degree
89705	Job Printers	30	31	3.3%	1	N/A	$12.59	N/A	Long-term on-the-job t
97941	Hoist and Winch Operators	42	43	2.4%	1	$21.26	$14.28	-32.8%	Moderate-term on-the
92947	Painters, Transportation Equipment	49	50	2.0%	1	$12.16	$15.17	24.8%	Moderate-term on-the
97951	Conveyor Operators and Tenders	100	101	1.0%	1	$21.89	$11.04	-49.6%	N/A
87949	All Other Mining Machine Operators	123	124	0.8%	1	N/A	$15.59	N/A	N/A
34011	Reporters and Correspondents	162	163	0.6%	1	$9.03	$15.59	72.6%	N/A
85317	Rail Car Repairers	126	127	0.8%	1	N/A	$17.47	N/A	N/A
24199	All Other Physical Scientists	128	129	0.8%	1	$17.93	$25.23	40.7%	N/A
68021	Ushers, Lobby Attendants, and Ticket Takers	130	131	0.8%	1	$5.55	$6.47	16.6%	Short-term on-the-job
87714	Rail-Track Laying and Maintenance Equipment Operators	210	211	0.5%	1	N/A	$16.82	N/A	N/A
21911	Compliance Officers & Enforcement Inspectors, Except Const.	225	226	0.4%	1	$20.18	$19.18	-5.0%	Work exp. in related o
31117	Graduate Assistants, Teaching	4	4	0.0%	0	N/A	N/A	N/A	N/A
34047	Music Directors, Singers, Composers, and Related Workers	2	2	0.0%	0	N/A	N/A	N/A	N/A
62021	Cooks, Private Household	7	7	0.0%	0	N/A	N/A	N/A	N/A
62031	Housekeepers/Butlers, Private	10	10	0.0%	0	N/A	N/A	N/A	N/A
63026	US Marshalls	3	3	0.0%	0	N/A	N/A	N/A	N/A
92999	Machine Operators/Tenders/Setters, NEC	14	14	0.0%	0	N/A	N/A	N/A	N/A
93997	Intermediate Hand Workers	2	2	0.0%	0	N/A	N/A	N/A	N/A
89802	Slaughterers and Butchers	11	11	0.0%	0	N/A	$8.94	N/A	N/A
89911	Precision Detail Design Decorators and Painters	10	10	0.0%	0	N/A	$10.25	N/A	N/A
92928	Cooling and Freezing Equipment Operators and Tenders	1	1	0.0%	0	N/A	$10.30	N/A	N/A
89599	All Other Precision Textile, Apparel, and Furnishings Workers	3	3	0.0%	0	N/A	$10.36	N/A	N/A
68028	Transportation Attendants, Ex. Flight Attendants & Baggage Porters	8	8	0.0%	0	N/A	$10.67	N/A	N/A
89899	All Other Precision Food and Tobacco Workers	1	1	0.0%	0	N/A	$10.90	N/A	N/A
92958	Cleaning, Washing, and Pickling Equipment Operators and Tenders	2	2	0.0%	0	N/A	$10.90	N/A	N/A
89905	Precision Molders, Shapers, Casters, & Carvers, Ex. Jewelry & Foundry	3	3	0.0%	0	N/A	$11.12	N/A	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
91902	Plastic Molding and Casting Machine Setters and Set-Up Operators	3	3	0.0%	0	N/A	$11.16	N/A	N/A
92917	Cooking Machine Operators and Tenders, Food and Tobacco	37	37	0.0%	0	N/A	$11.29	N/A	N/A
89999	All Other Precision Workers	29	29	0.0%	0	$11.57	$12.29	6.2%	N/A
91702	Welding Machine Setters and Set-Up Operators	54	54	0.0%	0	N/A	$13.65	N/A	N/A
97928	Dredge Operators	10	10	0.0%	0	N/A	$14.27	N/A	N/A
72002	First-Line Supervisors/Managers - Ag., Forestry, Fishing, & Related	26	26	0.0%	0	$13.99	$14.50	3.6%	N/A
97932	Loading Machine Operators, Underground Mining	14	14	0.0%	0	N/A	$14.59	N/A	N/A
97399	All Other Rail Vehicle Operators and Controllers	1	1	0.0%	0	N/A	$14.72	N/A	N/A
32399	All Other Therapists	51	51	0.0%	0	$18.70	$15.81	-15.5%	N/A
87121	Brattice Builders	16	16	0.0%	0	N/A	$15.90	N/A	N/A
97935	Shuttle Car Operators	44	44	0.0%	0	N/A	$16.50	N/A	N/A
87505	Pipelaying Fitters	6	6	0.0%	0	$12.44	$16.50	32.6%	N/A
87943	Mine Cutting and Channeling Machine Operators	146	146	0.0%	0	N/A	$16.52	N/A	N/A
32311	Corrective and Manual Arts Therapists	4	4	0.0%	0	N/A	$16.67	N/A	N/A
89715	Scanner Operators	1	1	0.0%	0	N/A	$16.75	N/A	N/A
87923	Roof Bolters	72	72	0.0%	0	N/A	$17.90	N/A	N/A
85599	Other Communications Equip. Mechanics, Installers, & Repairers	4	4	0.0%	0	$17.75	$18.37	3.5%	N/A
85326	Aircraft Engine Specialists	7	7	0.0%	0	N/A	$19.22	N/A	N/A
85911	Electric Meter Installers and Repairers	42	42	0.0%	0	$19.20	$19.22	0.1%	N/A
63038	Railroad and Transit Police and Special Agents	8	8	0.0%	0	N/A	$19.49	N/A	N/A
85511	Signal or Track Switch Maintainers	30	30	0.0%	0	N/A	$19.50	N/A	N/A
97311	Locomotive Firers	48	48	0.0%	0	N/A	$19.77	N/A	N/A
22508	Industrial Engineering Technicians and Technologists	1	1	0.0%	0	N/A	$19.84	N/A	N/A
97914	Main-Line Station Engineers	6	6	0.0%	0	N/A	$21.00	N/A	N/A
95011	Petroleum Pump System Operators	4	4	0.0%	0	N/A	$21.60	N/A	N/A
22302	Architects, Except Landscape and Marine	77	77	0.0%	0	$19.67	$24.85	26.3%	Bachelor's degree
22128	Industrial Engineers, Except Safety	74	74	0.0%	0	N/A	$26.18	N/A	Bachelor's degree
22105	Metallurgists and Metallurgical, Ceramic, and Materials Engineers	2	2	0.0%	0	N/A	$27.40	N/A	Bachelor's degree
89702	Hand Compositors and Typesetters	12	12	0.0%	0	$8.32	$11.68	40.4%	Long-term on-the-job t
89502	Fabric and Apparel Patternmakers and Lay-Out Workers	1	1	0.0%	0	N/A	$13.04	N/A	Long-term on-the-job t
85917	Watchmakers	3	3	0.0%	0	N/A	$13.16	N/A	Long-term on-the-job t
89712	Photoengravers	6	6	0.0%	0	N/A	$13.38	N/A	Long-term on-the-job t
89108	Machinists	399	399	0.0%	0	$15.06	$14.36	-4.6%	Long-term on-the-job t
89718	Platemakers	7	7	0.0%	0	N/A	$14.46	N/A	Long-term on-the-job t
89102	Tool and Die Makers	14	14	0.0%	0	N/A	$18.16	N/A	Long-term on-the-job t
25302	Operations and Systems Researchers & Analysts, Except Computer	4	4	0.0%	0	N/A	$24.93	N/A	Master's degree
92721	Sewing Machine Operators, Nongarment	21	21	0.0%	0	$7.35	$8.54	16.2%	Moderate-term on-the
92524	Screen Printing Machine Setters and Set-Up Operators	5	5	0.0%	0	N/A	$9.49	N/A	Moderate-term on-the
91321	Machine Forming Operators and Tenders, Metal and Plastic	5	5	0.0%	0	N/A	$10.59	N/A	Moderate-term on-the
89805	Bakers, Manufacturing	1	1	0.0%	0	N/A	$11.12	N/A	Moderate-term on-the
91302	Punching Machine Setters and Set-Up Operators, Metal & Plastic	15	15	0.0%	0	N/A	$11.54	N/A	Moderate-term on-the
55328	Statistical Clerks	35	35	0.0%	0	N/A	$12.02	N/A	Moderate-term on-the

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
92932	Dairy Processing Equipment Operators, Including Setters	3	3	0.0%	0	N/A	$12.39	N/A	Moderate-term on-the
91117	Machine Tool Cutting Operators and Tenders, Metal and Plastic	10	10	0.0%	0	N/A	$13.10	N/A	Moderate-term on-the
91108	Drilling & Boring Machine Tool Setters & Operators, Metal & Plastic	3	3	0.0%	0	N/A	$13.21	N/A	Moderate-term on-the
91105	Lathe & Turning Machine Tool Setters & Operators, Metal & Plastic	17	17	0.0%	0	N/A	$13.99	N/A	Moderate-term on-the
32923	Electroneurodiagnostic Technologists	2	2	0.0%	0	N/A	$16.02	N/A	Moderate-term on-the
93923	Sewers, Hand	1	1	0.0%	0	N/A	$8.16	N/A	Short-term on-the-job
93926	Cutters and Trimmers, Hand	10	10	0.0%	0	N/A	$8.91	N/A	Short-term on-the-job
97199	All Other Motor Vehicle Operators	48	48	0.0%	0	$15.74	$10.34	-34.3%	Short-term on-the-job
55326	Procurement Clerks	20	20	0.0%	0	N/A	$11.52	N/A	Short-term on-the-job
58017	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	7	7	0.0%	0	N/A	$12.03	N/A	Short-term on-the-job
58008	Production, Planning, and Expediting Clerks	97	97	0.0%	0	$18.20	$14.78	-18.8%	Short-term on-the-job
93114	Electrical and Electronic Equipment Assemblers, Precision	3	3	0.0%	0	N/A	$11.25	N/A	Work exp. in related o
93111	Electromechanical Equipment Assemblers, Precision	2	2	0.0%	0	N/A	$11.66	N/A	Work exp. in related o
97317	Railroad Brake, Signal, and Switch Operators	264	264	0.0%	0	$15.98	$18.16	13.6%	Work exp. in related o
87999	All Other Construction and Extractive Workers, Except Helpers	291	290	-0.3%	-1	$11.42	$13.90	21.7%	N/A
55344	Billing, Cost, and Rate Clerks	427	426	-0.2%	-1	$9.92	$11.36	14.5%	Short-term on-the-job
31399	All Other Teachers and Instructors	169	168	-0.6%	-1	N/A	N/A	N/A	N/A
24502	Biological, Ag., & Food Technicians and Technologists, Except Health	71	70	-1.4%	-1	$11.82	$14.51	22.8%	N/A
97926	Dragline Operators	102	101	-1.0%	-1	$26.38	$14.52	-45.0%	N/A
87941	Continuous Mining Machine Operators	145	144	-0.7%	-1	$20.47	$17.10	-16.5%	N/A
31114	Nursing Instructors, Postsecondary	64	63	-1.6%	-1	N/A	N/A	N/A	N/A
53802	Travel Clerks	42	41	-2.4%	-1	N/A	$9.51	N/A	N/A
53914	Real Estate Clerks	48	47	-2.1%	-1	N/A	$9.57	N/A	N/A
87905	Blasters and Explosives Workers	60	59	-1.7%	-1	$24.90	$15.40	-38.2%	N/A
28399	All Other Legal Assistants and Technicians, Except Clerical	41	40	-2.4%	-1	$13.74	$16.81	22.3%	N/A
97308	Rail Yard Engineers, Dinkey Operators, and Hostlers	42	41	-2.4%	-1	N/A	$17.26	N/A	N/A
95032	Stationary Engineers	45	44	-2.2%	-1	N/A	$18.93	N/A	Long-term on-the-job t
95028	Power Distributors and Dispatchers	49	48	-2.0%	-1	N/A	$22.38	N/A	Long-term on-the-job t
34056	Producers, Directors, Actors, and Other Entertainers	26	25	-3.8%	-1	N/A	N/A	N/A	Long-term on-the-job t
92905	Motion Picture Projectionists	24	23	-4.2%	-1	N/A	$10.28	N/A	Short-term on-the-job
25310	Mathematical Scientists	17	16	-5.9%	-1	N/A	$20.12	N/A	N/A
63021	Parking Enforcement Officers	14	13	-7.1%	-1	N/A	$12.19	N/A	N/A
56014	Peripheral EDP Equipment Operators	14	13	-7.1%	-1	$10.04	$11.89	18.4%	Moderate-term on-the
31209	All Other Physical Sciences Teachers, Postsecondary	12	11	-8.3%	-1	N/A	N/A	N/A	N/A
91305	Press & Press-Brake Machine Setters & Operators, Metal & Plastic	12	11	-8.3%	-1	N/A	$12.02	N/A	N/A
39005	Traffic Technicians	12	11	-8.3%	-1	N/A	$17.54	N/A	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
89717	Strippers	11	10	-9.1%	-1	N/A	$15.83	N/A	Long-term on-the-job t
31303	Teachers, Preschool	10	9	-10.0%	-1	$9.66	$9.39	-2.8%	Bachelor's degree
31206	Physics Teachers, Postsecondary	9	8	-11.1%	-1	N/A	N/A	N/A	N/A
57111	Telegraph and Teletype Operators	9	8	-11.1%	-1	N/A	$12.16	N/A	N/A
73099	All Other Timber Cutting and Related Logging Workers	9	8	-11.1%	-1	N/A	$12.49	N/A	N/A
34014	Broadcast News Analysts	9	8	-11.1%	-1	N/A	$21.53	N/A	N/A
85505	Frame Wirers, Central Office	9	8	-11.1%	-1	N/A	$22.21	N/A	N/A
92944	Cutting and Slicing Machine Operators and Tenders	8	7	-12.5%	-1	N/A	$10.80	N/A	N/A
92302	Sawing Machine Setters and Set-Up Operators	6	5	-16.7%	-1	N/A	$10.53	N/A	N/A
92951	Coating, Painting, & Spraying Machine Setters &Operators	6	5	-16.7%	-1	N/A	$11.46	N/A	N/A
79008	Log Graders and Scalers	6	5	-16.7%	-1	N/A	$11.65	N/A	N/A
93105	Machine Builders and Other Precision Machine Assemblers	3	2	-33.3%	-1	N/A	$14.52	N/A	Work exp. in related o
89302	Pattern and Model Makers, Wood	2	1	-50.0%	-1	N/A	$16.25	N/A	N/A
66017	Physical and Corrective Therapy Assistants and Aides	125	123	-1.6%	-2	$10.46	$12.02	14.9%	Associate's degree
89707	Electronic Pagination System Operators	90	88	-2.2%	-2	N/A	$14.86	N/A	Long-term on-the-job t
92923	Furnace, Kiln, Oven, Drier, or Kettle Operators and Tenders	100	98	-2.0%	-2	$15.60	$13.03	-16.5%	Moderate-term on-the
85944	Gas Appliance Repairers	79	77	-2.5%	-2	N/A	$15.93	N/A	N/A
24305	Agricultural and Food Scientists	63	61	-3.2%	-2	$23.54	$21.53	-8.5%	Bachelor's degree
92926	Boiler Operators and Tenders, Low Pressure	74	72	-2.7%	-2	N/A	$14.93	N/A	Moderate-term on-the
63028	Criminal Investigators, Public Service	35	33	-5.7%	-2	N/A	$26.48	N/A	N/A
63023	Bailiffs	25	23	-8.0%	-2	N/A	$12.38	N/A	N/A
89111	Tool Grinders, Filers, Sharpeners, and Other Precision Grinders	24	22	-8.3%	-2	$13.19	$13.46	2.0%	N/A
85928	Mechanical Control and Valve Installers and Repairers	25	23	-8.0%	-2	$14.51	$16.92	16.6%	N/A
31222	Engineering Teachers, Postsecondary	23	21	-8.7%	-2	N/A	N/A	N/A	N/A
31226	Computer Science Teachers, Postsecondary	22	20	-9.1%	-2	N/A	N/A	N/A	N/A
63002	Fire Inspectors	23	21	-8.7%	-2	N/A	$20.56	N/A	N/A
31508	Audio-Visual Specialists	21	19	-9.5%	-2	$17.10	$16.81	-1.7%	N/A
31204	Chemistry Teachers, Postsecondary	15	13	-13.3%	-2	N/A	N/A	N/A	N/A
73005	Choke Setters	16	14	-12.5%	-2	N/A	$13.10	N/A	N/A
92314	Woodworking Machine Operators and Tenders, Except Sawing	14	12	-14.3%	-2	N/A	$9.30	N/A	N/A
22308	Landscape Architects	14	12	-14.3%	-2	$24.13	$20.37	-15.6%	Bachelor's degree
57199	All Other Communications Equipment Operators	11	9	-18.2%	-2	N/A	$12.73	N/A	N/A
53911	Proofreaders and Copy Markers	11	9	-18.2%	-2	N/A	$10.12	N/A	Short-term on-the-job
92515	Letterpress Setters and Set-Up Operators	9	7	-22.2%	-2	N/A	$14.63	N/A	Moderate-term on-the
89917	Precision Optical Goods Workers	8	6	-25.0%	-2	N/A	$10.33	N/A	Long-term on-the-job t
92549	All Other Printing, Binding, and Related Machine Operators	7	5	-28.6%	-2	N/A	$10.93	N/A	N/A
79999	All Other Agricultural, Forestry, Fishing, and Related Workers	1,058	1,055	-0.3%	-3	$10.16	$10.09	-0.7%	N/A
21914	Tax Examiners, Collectors, and Revenue Agents	108	105	-2.8%	-3	$21.97	$19.92	-9.3%	Bachelor's degree
28105	Adjudicators, Hearings Officers, and Judicial Reviewers	73	70	-4.1%	-3	$17.31	$17.43	0.7%	N/A
21117	Budget Analysts	70	67	-4.3%	-3	$21.63	$22.94	6.1%	Bachelor's degree
92305	Head Sawyers	31	28	-9.7%	-3	N/A	$12.22	N/A	N/A
73008	Log-Handling Equipment Operators	26	23	-11.5%	-3	$15.84	$12.07	-23.8%	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
22102	Aeronautical and Astronautical Engineers	8	5	-37.5%	-3	N/A	$30.26	N/A	Bachelor's degree
21199	All Other Financial Specialists	304	300	-1.3%	-4	N/A	$21.87	N/A	N/A
92311	Woodworking Machine Setters and Operators, Except Sawing	164	160	-2.4%	-4	$10.29	$10.07	-2.1%	N/A
89311	Cabinetmakers and Bench Carpenters	118	114	-3.4%	-4	$11.34	$11.49	1.3%	Long-term on-the-job t
85502	Central Office and PBX Installers and Repairers	136	132	-2.9%	-4	$20.42	$20.63	1.0%	Post secondary vocatic
85717	Electronics Repairers, Commercial and Industrial Equipment	93	89	-4.3%	-4	$18.39	$17.21	-6.4%	Post secondary vocatic
63041	Fish and Game Wardens	78	74	-5.1%	-4	$16.30	$17.28	6.0%	N/A
73011	Logging Tractor Operators	47	43	-8.5%	-4	N/A	$11.46	N/A	N/A
97921	Gas Compressor Operators	45	41	-8.9%	-4	$18.20	$17.91	-1.6%	N/A
22517	Estimators and Drafters, Utilities	47	43	-8.5%	-4	$25.43	$22.76	-10.5%	N/A
92546	Bindery Machine Operators and Tenders	40	36	-10.0%	-4	$8.15	$10.23	25.5%	N/A
91505	Combination Machine Tool Setters and Operators, Metal & Plastic	32	28	-12.5%	-4	N/A	$13.45	N/A	N/A
85728	Electrical Installers and Repairers, Transportation Equipment	26	22	-15.4%	-4	$14.59	$16.20	11.0%	N/A
89123	Jewelers and Silversmiths	17	13	-23.5%	-4	N/A	$12.91	N/A	N/A
56021	Data Keyers, Composing	13	9	-30.8%	-4	N/A	$10.22	N/A	N/A
53108	Transit Clerks	10	6	-40.0%	-4	N/A	$9.04	N/A	N/A
87508	Pipelayers	224	219	-2.2%	-5	$10.90	$13.61	24.9%	N/A
31317	Instructors, Nonvocational Education	287	282	-1.7%	-5	$12.86	$13.60	5.8%	Work exp. in related o
85128	Machinery Maintenance Workers	155	150	-3.2%	-5	$19.42	$14.93	-23.1%	N/A
15002	Postmasters and Mail Superintendents	149	144	-3.4%	-5	$19.33	$22.28	15.3%	Work exp. in related o
83002	Precision Inspectors, Testers, and Graders	61	56	-8.2%	-5	$13.16	$14.44	9.7%	N/A
31212	Health Assessment and Treatment Teachers, Postsecondary	53	48	-9.4%	-5	N/A	N/A	N/A	N/A
89308	Wood Machinists	48	43	-10.4%	-5	N/A	$9.99	N/A	Long-term on-the-job t
31323	Farm and Home Management Advisors	46	41	-10.9%	-5	$18.56	$19.01	2.4%	Bachelor's degree
55317	Correspondence Clerks	32	27	-15.6%	-5	N/A	$11.16	N/A	Short-term on-the-job
89314	Furniture Finishers	11	6	-45.5%	-5	N/A	$10.03	N/A	Long-term on-the-job t
55341	Payroll and Timekeeping Clerks	240	234	-2.5%	-6	$11.40	$12.31	8.0%	Short-term on-the-job
34017	Announcers, Radio and Television	127	121	-4.7%	-6	$8.05	$11.77	46.2%	N/A
27105	Urban and Regional Planners	71	65	-8.5%	-6	$18.25	$21.68	18.8%	Master's degree
31202	Life Sciences Teachers, Postsecondary	62	56	-9.7%	-6	N/A	N/A	N/A	N/A
95014	Petroleum Refinery and Control Panel Operators	61	55	-9.8%	-6	$21.14	$20.91	-1.1%	N/A
57108	Central Office Operators	42	36	-14.3%	-6	N/A	$12.60	N/A	Moderate-term on-the
92541	Typesetting and Composing Machine Operators and Tenders	19	13	-31.6%	-6	N/A	$12.18	N/A	Moderate-term on-the
53702	Court Clerks	168	161	-4.2%	-7	$10.36	$11.67	12.6%	Short-term on-the-job
95021	Power-Generating Plant Operators, Ex. Auxiliary Equip. Operators	105	98	-6.7%	-7	N/A	$21.18	N/A	N/A
53705	Municipal Clerks	93	86	-7.5%	-7	$11.72	$12.15	3.7%	Short-term on-the-job
28102	Judges and Magistrates	79	72	-8.9%	-7	$15.33	$29.85	94.7%	N/A
73002	Fallers and Buckers	69	62	-10.1%	-7	$12.67	$13.85	9.3%	Short-term on-the-job
31224	Mathematical Sciences Teachers, Postsecondary	65	58	-10.8%	-7	N/A	N/A	N/A	N/A
85726	Station Installers and Repairers, Telephone	59	52	-11.9%	-7	$17.38	$18.44	6.1%	Post secondary vocatic
24599	Other Physical and Life Science Technicians & Technologists	266	258	-3.0%	-8	$13.52	$16.31	20.6%	N/A
95023	Auxiliary Equipment Operators, Power	186	178	-4.3%	-8	N/A	$20.75	N/A	N/A

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
92308	Sawing Machine Operators and Tenders	125	117	-6.4%	-8	$9.32	$9.50	1.9%	N/A
34002	Writers and Editors	134	126	-6.0%	-8	$12.80	$18.91	47.7%	N/A
31218	Art, Drama, and Music Teachers, Postsecondary	74	66	-10.8%	-8	N/A	N/A	N/A	N/A
53908	Advertising Clerks	41	33	-19.5%	-8	$8.06	$10.36	28.5%	Short-term on-the-job
97305	Locomotive Engineers	729	720	-1.2%	-9	N/A	$20.53	N/A	Work exp. in related o
57308	Postal Service Clerks	271	262	-3.3%	-9	N/A	$16.22	N/A	Short-term on-the-job
31517	Instructional Coordinators	180	171	-5.0%	-9	$19.37	$19.86	2.5%	N/A
56008	Mail Machine Operators, Preparation and Handling	118	109	-7.6%	-9	$7.47	$9.11	22.0%	N/A
85721	Powerhouse, Substation, and Relay Electricians	117	108	-7.7%	-9	N/A	$23.17	N/A	N/A
66026	Pharmacy Assistants	83	74	-10.8%	-9	N/A	N/A	N/A	N/A
34038	Designers, Except Interior Designers	333	323	-3.0%	-10	$11.29	$16.24	43.8%	Bachelor's degree
34008	Public Relations Specialists and Publicity Writers	116	106	-8.6%	-10	$15.45	$18.65	20.7%	Bachelor's degree
21917	Assessors	103	93	-9.7%	-10	$13.36	$15.43	15.5%	Bachelor's degree
85723	Electrical Power-Line Installers and Repairers	476	465	-2.3%	-11	$22.22	$20.46	-7.9%	Long-term on-the-job t
55105	Medical Secretaries	428	417	-2.6%	-11	$9.07	$11.26	24.1%	Post secondary vocatic
31210	Social Sciences Teachers	111	100	-9.9%	-11	N/A	N/A	N/A	N/A
31216	English, Foreign Lang Teachers	106	95	-10.4%	-11	N/A	N/A	N/A	N/A
58026	Order Fillers, Wholesale and Retail Sales	103	92	-10.7%	-11	$9.00	$9.73	8.1%	N/A
93102	Aircraft Structure, Surface, Rigging, & Systems Assemblers	26	15	-42.3%	-11	N/A	$17.83	N/A	Work exp. in related o
66005	Medical Assistants	173	161	-6.9%	-12	$8.40	$10.18	21.2%	Moderate-term on-the
53708	License Clerks	153	141	-7.8%	-12	$9.34	$11.39	21.9%	Short-term on-the-job
56005	Duplicating Machine Operators	35	22	-37.1%	-13	$8.17	$9.77	19.6%	N/A
97102	Truck Drivers, Heavy or Tractor-Trailer	3,866	3,852	-0.4%	-14	$12.74	$14.08	10.5%	N/A
21108	Loan Officers and Counselors	441	427	-3.2%	-14	$17.44	$20.05	15.0%	Bachelor's degree
57102	Switchboard Operators	426	412	-3.3%	-14	$7.88	$9.19	16.6%	Short-term on-the-job
66002	Dental Assistants	396	382	-3.5%	-14	$8.97	$11.22	25.1%	Moderate-term on-the
57305	Postal Mail Carriers	392	378	-3.6%	-14	$16.23	$16.39	1.0%	Short-term on-the-job
98502	Machine Feeders and Offbearers	133	119	-10.5%	-14	$9.44	$9.61	1.8%	Short-term on-the-job
97302	Railroad Conductors and Yardmasters	688	673	-2.2%	-15	$18.66	$20.36	9.1%	Work exp. in related o
15023	Communications, Transportation, & Utilities Oper. Managers	485	470	-3.1%	-15	$21.18	$26.11	23.3%	Work exp., plus a bach
85323	Aircraft Mechanics	154	139	-9.7%	-15	$15.93	$18.34	15.1%	N/A
66023	Ambulance Drivers & Attendants, Ex. Emergency Medical Techs	81	66	-18.5%	-15	$8.23	$9.00	9.4%	Short-term on-the-job
25105	Computer Programmers	282	266	-5.7%	-16	$16.67	$25.67	54.0%	N/A
98705	Refuse and Recyclable Material Collectors	119	102	-14.3%	-17	$9.37	$11.28	20.4%	Short-term on-the-job
66014	Psychiatric Aides	80	63	-21.3%	-17	N/A	$10.94	N/A	Short-term on-the-job
32314	Speech-Language Pathologists and Audiologists	222	204	-8.1%	-18	$16.83	$22.12	31.4%	Master's degree
79002	Forest and Conservation Workers	329	310	-5.8%	-19	$12.35	$11.98	-3.0%	Short-term on-the-job
63011	Police Detectives	97	77	-20.6%	-20	$16.89	$21.20	25.5%	N/A
31502	Librarians, Professional	371	350	-5.7%	-21	$17.01	$19.24	13.1%	Master's degree
67099	All Other Cleaning and Building Service Workers	864	842	-2.5%	-22	$7.99	$9.53	19.3%	N/A
81011	First-Line Supervisors/Managers - Transportation & Material-Moving	264	242	-8.3%	-22	$20.26	$18.49	-8.7%	N/A
63044	Crossing Guards	155	131	-15.5%	-24	$7.85	$8.21	4.6%	Short-term on-the-job

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
55314	Personnel Clerks, Except Payroll and Timekeeping	150	126	-16.0%	-24	$11.88	$12.25	3.1%	Short-term on-the-job
58014	Meter Readers, Utilities	156	131	-16.0%	-25	$13.36	$12.96	-3.0%	Short-term on-the-job
81002	First-Line Supervisors/Managers - Mechanics, Installers, & Repairers	1,046	1,020	-2.5%	-26	$19.61	$20.28	3.4%	N/A
31314	Teachers and Instructors, Vocational Education and Training	560	534	-4.6%	-26	$16.74	$17.62	5.3%	Work exp. in related o
66099	All Other Health Service Workers	129	103	-20.2%	-26	$9.36	$9.73	4.0%	Short-term on-the-job
31505	Technical Assistants, Library	193	166	-14.0%	-27	$7.99	$10.91	36.5%	Short-term on-the-job
61002	Fire Fighting and Prevention Supervisors	158	130	-17.7%	-28	$22.08	$21.94	-0.6%	Work exp. in related o
56002	Billing, Posting, and Calculating Machine Operators	113	85	-24.8%	-28	$8.71	$10.22	17.3%	Short-term on-the-job
85311	Bus and Truck Mechanics and Diesel Engine Specialists	769	738	-4.0%	-31	$13.39	$14.66	9.5%	Long-term on-the-job t
31304	Teachers, Kindergarten	300	269	-10.3%	-31	N/A	N/A	N/A	Bachelor's degree
95002	Water and Liquid Waste Treatment Plant and System Operators	329	297	-9.7%	-32	$16.09	$14.76	-8.3%	Long-term on-the-job t
56099	All Other Office Machine Operators	202	168	-16.8%	-34	$9.91	$10.94	10.4%	N/A
65014	Dining Room and Cafeteria Attendants and Bartender Helpers	1,036	1,001	-3.4%	-35	$5.95	$6.47	8.7%	Short-term on-the-job
19002	Public Admin. Chief Exececutives, Legislators, & General Admin.	343	308	-10.2%	-35	$12.87	$15.55	20.8%	Work exp., plus a bach
81099	Other First-Line Supervisors/Managers - Prod., Const., Maintenance	604	568	-6.0%	-36	$23.55	$18.75	-20.4%	N/A
58002	Dispatchers, Police, Fire, and Ambulance	436	400	-8.3%	-36	$9.84	$11.97	21.6%	Moderate-term on-the
61005	Police and Detective Supervisors	228	192	-15.8%	-36	$19.35	$24.08	24.4%	Work exp. in related o
25104	Computer Support Specialists	177	139	-21.5%	-38	$14.98	$19.52	30.3%	Associate's degree
55335	Customer Service Representatives, Utilities	215	171	-20.5%	-44	$12.24	$14.16	15.7%	N/A
67002	Maids and Housekeeping Cleaners	2,798	2,752	-1.6%	-46	$6.74	$7.29	8.2%	N/A
15005	Education Administrators	1,107	1,059	-4.3%	-48	$25.77	$27.78	7.8%	Work exp., plus a bach
22599	All Other Engineering and Related Technicians and Technologists	865	816	-5.7%	-49	$17.60	$19.15	8.8%	N/A
56017	Data Entry Keyers, Except Composing	262	210	-19.8%	-52	$8.68	$9.64	11.1%	N/A
63008	Fire Fighters	393	334	-15.0%	-59	$13.17	$15.62	18.6%	Long-term on-the-job t
22199	All Other Engineers	450	384	-14.7%	-66	$21.29	$28.44	33.6%	N/A
53805	Reservation and Transportation Ticket Agents	173	106	-38.7%	-67	$7.55	$12.26	62.4%	N/A
53105	New Accounts Clerks	214	139	-35.0%	-75	$9.66	$10.46	8.3%	Work exp. in related o
63017	Correction Officers and Jailers	694	618	-11.0%	-76	$10.94	$14.69	34.3%	Long-term on-the-job t
53502	Welfare Eligibility Workers and Interviewers	483	398	-17.6%	-85	$16.69	$16.83	0.8%	Moderate-term on-the
85314	Mobile Heavy Equipment Mechanics, Except Engines	766	671	-12.4%	-95	$17.72	$15.71	-11.3%	Long-term on-the-job t
97111	Bus Drivers, School	1,345	1,249	-7.1%	-96	$9.13	$9.34	2.3%	Short-term on-the-job
63032	Sheriffs and Deputy Sheriffs	597	499	-16.4%	-98	$13.69	$14.64	6.9%	Long-term on-the-job t
31311	Teachers, Special Education	805	697	-13.4%	-108	N/A	N/A	N/A	Bachelor's degree
56011	Computer Operators, Except Peripheral Equipment	401	286	-28.7%	-115	$10.22	$12.92	26.4%	Moderate-term on-the
63014	Police Patrol Officers	718	598	-16.7%	-120	$14.42	$18.78	30.2%	Long-term on-the-job t
53902	Library Assistants and Bookmobile Drivers	596	467	-21.6%	-129	$7.66	$8.81	15.0%	Short-term on-the-job
65028	Cooks, Institution or Cafeteria	1,141	991	-13.1%	-150	$7.46	$8.22	10.2%	Long-term on-the-job t
66008	Nursing Aides, Orderlies, and Attendants	2,524	2,373	-6.0%	-151	$7.39	$8.32	12.6%	Short-term on-the-job
51002	First-Line Supervisors/Managers - Clerical & Admin. Support Workers	1,800	1,632	-9.3%	-168	$13.44	$16.34	21.6%	Work exp. in related o
31299	All Other Postsecondary Teachers	1,722	1,545	-10.3%	-177	N/A	N/A	N/A	N/A
31305	Teachers, Elementary School	3,553	3,336	-6.1%	-217	N/A	N/A	N/A	Bachelor's degree
53808	Hotel Desk Clerks	729	507	-30.5%	-222	$6.78	$7.53	11.1%	Short-term on-the-job

Table 3-8: Wyoming Projections for All Occupations, Net and Percent Employment Change, 1998-2008 (Continued)

OES* Code	Occupational Title	1998 Employment	2008 Employment	Percent Change	Net Change	1998 Wyoming Average Wage	1998 U.S. Average Wage	1998 U.S. Percent Difference Wages to Wyoming	Typical Education/Ex
55108	Secretaries, Except Legal and Medical	4,419	4,185	-5.3%	-234	$9.35	$11.86	26.8%	Moderate-term on-the
53102	Tellers	765	524	-31.5%	-241	$7.42	$8.49	14.4%	Short-term on-the-job
55305	Receptionists and Information Clerks	1,450	1,197	-17.4%	-253	$8.09	$9.26	14.5%	Short-term on-the-job
55338	Bookkeeping, Accounting, and Auditing Clerks	4,382	4,014	-8.4%	-368	$9.70	$11.71	20.7%	Moderate-term on-the
53905	Teacher Aides and Educational Assistants, Clerical	1,620	1,247	-23.0%	-373	$6.79	$7.80	14.9%	N/A
55347	General Office Clerks	5,551	4,699	-15.3%	-852	$8.66	$10.06	16.2%	Short-term on-the-job

** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*

N/A - Not Available

From the industry projections (see Table 3-9), we see general merchandise stores (SIC 53) has a base (current year) employment of 4,936. Employment is projected to reach 5,992 by 2008. From the OES survey we learn the percent of the employment in that occupation-industry combination within the specific 2-digit industry as shown in Table 3-9. Lastly, by multiplying the base employment (4,936 for SIC 53) with the percent of employment in the occupation-industry combination (36.1% for retail salespersons), we can determine the number of individuals (1,780) working as retail salespersons within general merchandise stores. The same principle applies to the projected employment.

These methods are applied to the remaining 2-digit industries, and the data are aggregated to the desired industry level. From the example in Table 3-9, the occupation cashiers occurs in both of the industries presented. The aggregate of the two industries combined is the number of cashiers in SIC 53 plus the number of cashiers in SIC 54 for both the base and projected years. Therefore, the new aggregated base and projected employment for cashiers becomes 2,443 and 2,712, correspondingly.

Table 3-9: Example of Projections Calculation

Data from Industry Projections	Data from OES* Survey		Combined Data			
SIC 53 - General Merchandise Stores**	**SIC 53 - General Merchandise Stores**	**Percent within Occupation**	**Intermediate Base Year Calculations**	**Base Year Employment by Occupation**	**Intermediate Projected Year Calculations**	**Projected Year Employment by Occupation**
Employment	49011 - Retail salespersons	36.1%	(4,936 X 36.1%)	1,780	(5,992 X 36.1%)	2,161
Base Projected	49023 - Cashiers	16.4%	(4,936 X 16.4%)	808	(5,992 X 16.4%)	981
4,936 5,992	58097 - Stock clerks and order fillers	9.6%	(4,936 X 9.6%)	472	(5,992 X 9.6%)	573
	41002 - Marketing and sales worker supervisors	4.8%	(4,936 X 4.8%)	238	(5,992 X 4.8%)	289
	58028 - Shipping, receiving, and traffic clerks	4.1%	(4,936 X 4.1%)	201	(5,992 X 4.1%)	244
	49995 - All other sales and related workers	2.2%	(4,936 X 2.2%)	110	(5,992 X 2.2%)	134
	55347 - Office clerks, general	2.0%	(4,936 X 2.0%)	101	(5,992 X 2.0%)	122
	19005 - General managers and top executives	2.0%	(4,936 X 2.0%)	98	(5,992 X 2.0%)	119
	98710 - Freight, stock, and material movers, hand	1.4%	(4,936 X 1.4%)	68	(5,992 X 1.4%)	82
	68005 - Hairdressers, hairstylists, and cosmetologists	1.2%	(4,936 X 1.2%)	58	(5,992 X 1.2%)	71
	All Other Occupations	20.3%	(4,936 X 20.3%)	1,002	(5,992 X 20.3%)	1,216
SIC 54 - Food Stores	**SIC 54 - Food Stores**	**Percent within Occupation**	**Intermediate Base Year Calculations**	**Base Year Employment by Occupation**	**Intermediate Projected Year Calculations**	**Projected Year Employment by Occupation**
Employment	49023 - Cashiers	29.7%	(5,511 X 29.7%)	1,635	(5,833 X 29.7%)	1,731
Base Projected	58097 - Stock clerks and order fillers	19.9%	(5,511 X 19.9%)	1,098	(5,833 X 19.9%)	1,162
5,511 5,833	98902 - Hand packers and packagers	6.6%	(5,511 X 6.6%)	365	(5,833 X 6.6%)	387
	41002 - Marketing and sales worker supervisors	6.3%	(5,511 X 6.3%)	348	(5,833 X 6.3%)	369
	49011 - Retail salespersons	5.5%	(5,511 X 5.5%)	303	(5,833 X 5.5%)	321
	65040 - Food counter, fountain, and related workers	5.3%	(5,511 X 5.3%)	290	(5,833 X 5.3%)	307
	65038 - Food preparation workers	4.3%	(5,511 X 4.3%)	236	(5,833 X 4.3%)	250
	89803 - Butchers and meatcutters	3.6%	(5,511 X 3.6%)	196	(5,833 X 3.6%)	207
	65021 - Bakers, bread and pastry	3.0%	(5,511 X 3.0%)	165	(5,833 X 3.0%)	174
	19005 - General managers and top executives	2.6%	(5,511 X 2.6%)	144	(5,833 X 2.6%)	152
	All Other Occupations	13.3%	(5,511 X 13.3%)	731	(5,833 X 13.3%)	773

** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*
*** Standard Industrial Classification (SIC) codes categorize establishments by industry.*

The demonstration of calculating occupational projections was necessarily simple. The software used to do the actual computations takes other factors into consideration including census data, national trends in occupations, and national staffing patterns to adjust for missing data. The end product however is the ability to produce occupational projections at the 2-digit, major industry, and statewide levels.

Technical Appendix Chapter 5

Occupational Employment Statistics (OES) Wage Survey

The Occupational Employment Statistics (OES) wage program collects wages and employment, for the 50 states and U.S. territories, for over 750 occupations. The OES program surveys approximately 400,000 establishments[23] per year nationwide. The 1998 OES data is actually a combination of survey data collected for the years 1996, 1997, and 1998, thus including over 1.2 million establishments. Each state is responsible for collecting its own data and submitting the data to the Bureau of Labor Statistics (BLS) for compilation. One product of this endeavor is the annual ***Wyoming Wage Survey***.[24]

The data collected by the OES survey includes the industry of the employer (via ES-202)[25] and information about jobs including the occupation of jobs worked in each firm and the rate of compensation (hourly wage). The OES survey includes all full-time and part-time wage and salary jobs in non-farm industries. The survey does not cover the self-employed, owners and partners in unincorporated firms, household workers, or unpaid family workers. As the survey only collects data on a sample of representative firms, data are adjusted to the full universe count of employment (using the ES-202 data). For example, if data were collected from 25 establishments in the metal mining industry, representing 50 percent of the employment in that industry, the number of jobs in a specific sampled occupation would be adjusted to represent the total employment for the metal mining industry.

Although the OES program collects data on more than 750 occupations, not every state reports data on all occupations. This is due to issues surrounding confidentiality and/or the absence of industries only in some states. For example, if there were only three lawyers in the state of Wyoming and their occupational wage data were published, it becomes possible to ascertain an individual's wages. In this case, the data are suppressed to assure anonymity of the individual. Therefore, Wyoming's 1998 Wage Survey only presents data for 417 occupations.

Wage and Occupation Table

The "Occupation, Wage, and Employment Table" was created using the data from BLS, which include occupational information on total employment and average hourly wage for the nation, each of the 50 states, and U.S. territories. The education/typical experience level was downloaded from the BLS's "Occupational Employment, Training, and Earnings" Internet site, and matched to the OES survey data on the specific occupation.

Method

The data provided in the "Occupation, Wage, and Employment Table" were grouped on typical education/experience level. It is not appropriate to calculate the average wage per education/ experience level without considering the total employment for each occupation in the individual states. For example, suppose there are only two occupations in Wyoming and Texas requiring an associate's degree (see Table 5-4). The hypothetical example given in Table 5-4 demonstrates the difference between straight and weighted averages. The problems with straight averaging arise because not all occupations requiring a specified level of training are distributed evenly from state to state. This problem is compounded when it is known that specific occupations are paid different wages from state to state. The lower tier of Table 5-4 shows the steps needed to correct for the variations in employment and wages. It also shows how to calculate the percent difference in the wages of Texas and Wyoming.

Table 5-4: Example of Straight Average Wage Compared to Weighted Average Wage

Straight Average Wage Example

OES* Code	Occupational Title	WY Employment	WY Wage	Texas Employment	Texas Wage
25104	Computer Support Spec.	100	$20.00	100,000	$25.00
32502	Registered Nurses	1,000	$12.00	10,000	$15.00
		Total Occupations	Total Wages	Total Occupations	Total Wages
		2	$32.00	2	$40.00
Straight Average Wage*		Wyoming	$16.00	Texas	$20.00

Weighted Average Wage Example

OES Code	Occupational Title	WY Employment	WY Wage	WY Employ. Multiplied by WY Wage	Texas Employment	Texas Wage	TX Employ. Multiplied by TX Wage
25104	Computer Support Spec.	100	$20.00	$2,000.00	100,000	$25.00	$2,500,000.00
32502	Registered Nurses	1,000	$12.00	$12,000.00	10,000	$15.00	$150,000.00
		Total Employment		Total Wages	Total Employment		Total Wages
Totals used for Weighted Average		1,100		$14,000.00	110,000		$2,650,000.00
Weighted Average Wage**				$12.72			$24.09

** The Occupational Employment Statistics (OES) program produces estimates of occupational wages from a survey of establishments operating in Wyoming; each occupation is given a unique classification code.*
*** TX's Wage compared to WY's Wage using straight average = (TX Avg Wage - WY Avg Wage) / (WY Avg Wage) = 25% Greater*
**** TX's Wage compared to WY's Wage using weighted average = (TX Avg Wage - WY Avg Wage) / (WY Avg Wage) = 89.4% Greater*

Appendix B

Table B: Individuals by Gender and Primary Industry, 1998

Primary Industry*	Industry		Gender Male	Female	N/A	Total
Agriculture	**Total**	**Count**	**2,580**	**1,241**	**1,561**	**5,382**
		Row %	**47.9%**	**23.1%**	**29.0%**	**100.0%**
		Col %	**2.1%**	**1.1%**	**2.6%**	**1.8%**
Mining	Metal Mining	Count	707	88	117	912
		Row %	77.5%	9.6%	12.8%	100.0%
		Col %	0.6%	0.1%	0.2%	0.3%
	Coal Mining	Count	4,218	652	453	5,323
		Row %	79.2%	12.2%	8.5%	100.0%
		Col %	3.4%	0.6%	0.7%	1.8%
	Oil & Gas Extraction	Count	8,802	1,046	1,911	11,759
		Row %	74.9%	8.9%	16.3%	100.0%
		Col %	7.1%	0.9%	3.1%	4.0%
	Nonmetallic Minerals Mining	Count	2,686	309	402	3,397
		Row %	79.1%	9.1%	11.8%	100.0%
		Col %	2.2%	0.3%	0.7%	1.1%
	Total	**Count**	**16,413**	**2,095**	**2,883**	**21,391**
		Row %	**76.7%**	**9.8%**	**13.5%**	**100.0%**
		Col %	**13.2%**	**1.9%**	**4.7%**	**7.2%**
Construction	General Building Contractors	Count	4,494	471	1,821	6,786
		Row %	66.2%	6.9%	26.8%	100.0%
		Col %	3.6%	0.4%	3.0%	2.3%
	Heavy Construction	Count	5,637	844	3,028	9,509
		Row %	59.3%	8.9%	31.8%	100.0%
		Col %	4.5%	0.8%	4.9%	3.2%
	Special Trade Construction	Count	8,282	1,054	3,212	12,548
		Row %	66.0%	8.4%	25.6%	100.0%
		Col %	6.7%	1.0%	5.2%	4.2%
	Total	**Count**	**18,413**	**2,369**	**8,061**	**28,843**
		Row %	**63.8%**	**8.2%**	**27.9%**	**100.0%**
		Col %	**14.8%**	**2.1%**	**13.2%**	**9.8%**
Manufacturing	Durable Goods	Count	4,734	1,151	938	6,823
		Row %	69.4%	16.9%	13.7%	100.0%
		Col %	3.8%	1.0%	1.5%	2.3%
	Nondurable Goods	Count	4,853	2,429	1,170	8,452
		Row %	57.4%	28.7%	13.8%	100.0%
		Col %	3.9%	2.2%	1.9%	2.9%
	Total	**Count**	**9,587**	**3,580**	**2,108**	**15,275**
		Row %	**62.8%**	**23.4%**	**13.8%**	**100.0%**
		Col %	**7.7%**	**3.2%**	**3.4%**	**5.2%**
Transportation, Communications & Public Utilities (TCPU)	Transportation	Count	5,096	1,499	1,343	7,938
		Row %	64.2%	18.9%	16.9%	100.0%
		Col %	4.1%	1.4%	2.2%	2.7%
	Communications & Public Utilities	Count	3,921	1,343	603	5,867
		Row %	66.8%	22.9%	10.3%	100.0%
		Col %	3.2%	1.2%	1.0%	2.0%
	Total	**Count**	**9,017**	**2,842**	**1,946**	**13,805**
		Row %	**65.3%**	**20.6%**	**14.1%**	**100.0%**
		Col %	**7.3%**	**2.6%**	**3.2%**	**4.7%**
Wholesale Trade	Durable Goods	Count	3,495	1,069	675	5,239
		Row %	66.7%	20.4%	12.9%	100.0%
		Col %	2.8%	1.0%	1.1%	1.8%

**Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table B: Individuals by Gender and Primary Industry, 1998 (Continued)

Primary Industry*	Industry		Gender Male	Female	N/A	Total
Wholesale Trade (Continued)	Nondurable Goods	Count	2,548	1,039	632	4,219
		Row %	60.4%	24.6%	15.0%	100.0%
		Col %	2.1%	0.9%	1.0%	1.4%
	Total	**Count**	**6,043**	**2,108**	**1,307**	**9,458**
		Row %	**63.9%**	**22.3%**	**13.8%**	**100.0%**
		Col %	**4.9%**	**1.9%**	**2.1%**	**3.2%**
Retail Trade	Building Materials & Garden Supplies	Count	1,506	748	472	2,726
		Row %	55.2%	27.4%	17.3%	100.0%
		Col %	1.2%	0.7%	0.8%	0.9%
	General Merchandise Stores	Count	1,537	3,585	1,838	6,960
		Row %	22.1%	51.5%	26.4%	100.0%
		Col %	1.2%	3.3%	3.0%	2.4%
	Food Stores	Count	2,315	3,901	1,429	7,645
		Row %	30.3%	51.0%	18.7%	100.0%
		Col %	1.9%	3.5%	2.3%	2.6%
	Auto Dealers & Service Stations	Count	5,198	4,130	1,891	11,219
		Row %	46.3%	36.8%	16.9%	100.0%
		Col %	4.2%	3.7%	3.1%	3.8%
	Apparel & Accessory Stores	Count	361	1,047	660	2,068
		Row %	17.5%	50.6%	31.9%	100.0%
		Col %	0.3%	0.9%	1.1%	0.7%
	Furniture & Home Furnishing Stores	Count	980	633	381	1,994
		Row %	49.1%	31.7%	19.1%	100.0%
		Col %	0.8%	0.6%	0.6%	0.7%
	Eating & Drinking Places	Count	6,839	10,899	7,355	25,093
		Row %	27.3%	43.4%	29.3%	100.0%
		Col %	5.5%	9.9%	12.0%	8.5%
	Miscellaneous Retail	Count	1,705	3,333	1,544	6,582
		Row %	25.9%	50.6%	23.5%	100.0%
		Col %	1.4%	3.0%	2.5%	2.2%
	Total	**Count**	**20,441**	**28,276**	**15,570**	**64,287**
		Row %	**31.8%**	**44.0%**	**24.2%**	**100.0%**
		Col %	**16.5%**	**25.6%**	**25.4%**	**21.7%**
Finance, Insurance & Real Estate (FIRE)	Finance	Count	1,019	3,392	712	5,123
		Row %	19.9%	66.2%	13.9%	100.0%
		Col %	0.8%	3.1%	1.2%	1.7%
	Insurance	Count	726	1,833	365	2,924
		Row %	24.8%	62.7%	12.5%	100.0%
		Col %	0.6%	1.7%	0.6%	1.0%
	Real Estate	Count	896	992	570	2,458
		Row %	36.5%	40.4%	23.2%	100.0%
		Col %	0.7%	0.9%	0.9%	0.8%
	Total	**Count**	**2,641**	**6,217**	**1,647**	**10,505**
		Row %	**25.1%**	**59.2%**	**15.7%**	**100.0%**
		Col %	**2.1%**	**5.6%**	**2.7%**	**3.6%**
Services	Hotels & Other Lodging Places	Count	3,065	5,346	8,741	17,152
		Row %	17.9%	31.2%	51.0%	100.0%
		Col %	2.5%	4.8%	14.3%	5.8%
	Personal Services	Count	551	1,426	582	2,559
		Row %	21.5%	55.7%	22.7%	100.0%
		Col %	0.4%	1.3%	1.0%	0.9%
	Business Services	Count	4,273	4,146	2,529	10,948
		Row %	39.0%	37.9%	23.1%	100.0%
		Col %	3.4%	3.8%	4.1%	3.7%
	Auto Repair, Services, Parking	Count	1,717	410	516	2,643
		Row %	65.0%	15.5%	19.5%	100.0%
		Col %	1.4%	0.4%	0.8%	0.9%

**Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table B: Individuals by Gender and Primary Industry, 1998 (Continued)

Primary Industry*	Industry		Gender Male	Female	N/A	Total
Services (Continued)	Miscellaneous Repair Services	Count	723	199	184	1,106
		Row %	65.4%	18.0%	16.6%	100.0%
		Col %	0.6%	0.2%	0.3%	0.4%
	Motion Pictures	Count	258	385	275	918
		Row %	28.1%	41.9%	30.0%	100.0%
		Col %	0.2%	0.3%	0.4%	0.3%
	Amusement & Recreation Services	Count	1,510	1,120	1,710	4,340
		Row %	34.8%	25.8%	39.4%	100.0%
		Col %	1.2%	1.0%	2.8%	1.5%
	Health Services	Count	1,728	8,556	1,961	12,245
		Row %	14.1%	69.9%	16.0%	100.0%
		Col %	1.4%	7.8%	3.2%	4.1%
	Legal Services	Count	357	942	229	1,528
		Row %	23.4%	61.6%	15.0%	100.0%
		Col %	0.3%	0.9%	0.4%	0.5%
	Educational Services	Count	352	326	645	1,323
		Row %	26.6%	24.6%	48.8%	100.0%
		Col %	0.3%	0.3%	1.1%	0.4%
	Social Services	Count	1,259	4,700	1,047	7,006
		Row %	18.0%	67.1%	14.9%	100.0%
		Col %	1.0%	4.3%	1.7%	2.4%
	Museums, Botanical Gardens	Count	118	186	73	377
		Row %	31.3%	49.3%	19.4%	100.0%
		Col %	0.1%	0.2%	0.1%	0.1%
	Membership Organizations	Count	847	1,391	458	2,696
		Row %	31.4%	51.6%	17.0%	100.0%
		Col %	0.7%	1.3%	0.7%	0.9%
	Engineering & Management Services	Count	2,046	1,584	971	4,601
		Row %	44.5%	34.4%	21.1%	100.0%
		Col %	1.6%	1.4%	1.6%	1.6%
	Private Households	Count	128	485	167	780
		Row %	16.4%	62.2%	21.4%	100.0%
		Col %	0.1%	0.4%	0.3%	0.3%
	Services, Not Elsewhere Classified	Count	69	38	46	153
		Row %	45.1%	24.8%	30.1%	100.0%
		Col %	0.1%	0.0%	0.1%	0.1%
	Total	**Count**	**19,001**	**31,240**	**20,134**	**70,375**
		Row %	**27.0%**	**44.4%**	**28.6%**	**100.0%**
		Col %	**15.3%**	**28.3%**	**32.9%**	**23.8%**
Government	Federal Govt. Public Administration	Count	195	49	4	248
		Row %	78.6%	19.8%	1.6%	100.0%
		Col %	0.2%	0.0%	0.0%	0.1%
	Federal Govt. Other	Count	375	195	73	643
		Row %	58.3%	30.3%	11.4%	100.0%
		Col %	0.3%	0.2%	0.1%	0.2%
	State Govt. Public Administration	Count	2,845	3,478	376	6,699
		Row %	42.5%	51.9%	5.6%	100.0%
		Col %	2.3%	3.2%	0.6%	2.3%
	State Govt. Other	Count	3,443	2,346	516	6,305
		Row %	54.6%	37.2%	8.2%	100.0%
		Col %	2.8%	2.1%	0.8%	2.1%
	Local Govt. Public Administration	Count	5,290	3,992	1,319	10,601
		Row %	49.9%	37.7%	12.4%	100.0%
		Col %	4.3%	3.6%	2.2%	3.6%
	Local Govt. Other	Count	7,817	20,194	3,619	31,630
		Row %	24.7%	63.8%	11.4%	100.0%
		Col %	6.3%	18.3%	5.9%	10.7%

**Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table B: Individuals by Gender and Primary Industry, 1998 (Continued)

Primary Industry*	Industry		Gender Male	Female	N/A	Total
Government (Continued)	Total	Count	19,965	30,254	5,907	56,126
		Row %	35.6%	53.9%	10.5%	100.0%
		Col %	16.1%	27.4%	9.7%	19.0%
Not Available	Total	Count	50	55	58	163
		Row %	30.7%	33.7%	35.6%	100.0%
		Col %	0.0%	0.0%	0.1%	0.1%
Total		Count	124,151	110,277	61,182	295,610
		Row %	42.0%	37.3%	20.7%	100.0%
		Col %	100.0%	100.0%	100.0%	100.0%

**Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Appendix C

Table C: Individuals by Age and Primary Industry, 1998

Primary Industry*	Industry		Age Group <16	16-19	20-24	25-34	35-44	45-54	55-64	65+	N/A	Table Total
Agriculture	**Total**	**Count**	**59**	**319**	**565**	**853**	**895**	**594**	**301**	**182**	**1,614**	**5,382**
		Row %	**1.1%**	**5.9%**	**10.5%**	**15.8%**	**16.6%**	**11.0%**	**5.6%**	**3.4%**	**30.0%**	**100.0%**
		Col %	**4.7%**	**1.8%**	**2.0%**	**1.8%**	**1.5%**	**1.2%**	**1.4%**	**2.9%**	**2.5%**	**1.8%**
Mining	Metal Mining	Count	1	31	81	169	250	172	67	15	126	912
		Row %	0.1%	3.4%	8.9%	18.5%	27.4%	18.9%	7.3%	1.6%	13.8%	100.0%
		Col %	0.1%	0.2%	0.3%	0.3%	0.4%	0.4%	0.3%	0.2%	0.2%	0.3%
	Coal Mining	Count		66	242	560	1,832	1,505	590	27	501	5,323
		Row %		1.2%	4.5%	10.5%	34.4%	28.3%	11.1%	0.5%	9.4%	100.0%
		Col %		0.4%	0.9%	1.2%	3.0%	3.1%	2.8%	0.4%	0.8%	1.8%
	Oil & Gas Extraction	Count	14	305	1,128	2,143	3,312	2,023	702	142	1,990	11,759
		Row %	0.1%	2.6%	9.6%	18.2%	28.2%	17.2%	6.0%	1.2%	16.9%	100.0%
		Col %	1.1%	1.7%	4.0%	4.4%	5.4%	4.2%	3.3%	2.3%	3.1%	4.0%
	Nonmetallic Minerals Mining	Count	2	42	202	497	995	848	345	32	434	3,397
		Row %	0.1%	1.2%	5.9%	14.6%	29.3%	25.0%	10.2%	0.9%	12.8%	100.0%
		Col %	0.2%	0.2%	0.7%	1.0%	1.6%	1.8%	1.6%	0.5%	0.7%	1.1%
	Total	**Count**	**17**	**444**	**1,653**	**3,369**	**6,389**	**4,548**	**1,704**	**216**	**3,051**	**21,391**
		Row %	**0.1%**	**2.1%**	**7.7%**	**15.7%**	**29.9%**	**21.3%**	**8.0%**	**1.0%**	**14.3%**	**100.0%**
		Col %	**1.3%**	**2.5%**	**5.9%**	**6.9%**	**10.5%**	**9.5%**	**8.1%**	**3.5%**	**4.8%**	**7.2%**
Construction	General Building Contractors	Count	12	299	730	1,232	1,396	913	269	53	1,882	6,786
		Row %	0.2%	4.4%	10.8%	18.2%	20.6%	13.5%	4.0%	0.8%	27.7%	100.0%
		Col %	1.0%	1.7%	2.6%	2.5%	2.3%	1.9%	1.3%	0.9%	3.0%	2.3%
	Heavy Construction	Count	16	320	892	1,513	1,788	1,140	629	152	3,059	9,509
		Row %	0.2%	3.4%	9.4%	15.9%	18.8%	12.0%	6.6%	1.6%	32.2%	100.0%
		Col %	1.3%	1.8%	3.2%	3.1%	2.9%	2.4%	3.0%	2.4%	4.8%	3.2%
	Special Trade Construction	Count	40	530	1,463	2,342	2,667	1,438	586	178	3,304	12,548
		Row %	0.3%	4.2%	11.7%	18.7%	21.3%	11.5%	4.7%	1.4%	26.3%	100.0%
		Col %	3.2%	3.0%	5.2%	4.8%	4.4%	3.0%	2.8%	2.9%	5.2%	4.2%
	Total	**Count**	**68**	**1,149**	**3,085**	**5,087**	**5,851**	**3,491**	**1,484**	**383**	**8,245**	**28,843**
		Row %	**0.2%**	**4.0%**	**10.7%**	**17.6%**	**20.3%**	**12.1%**	**5.1%**	**1.3%**	**28.6%**	**100.0%**
		Col %	**5.4%**	**6.5%**	**10.9%**	**10.5%**	**9.6%**	**7.3%**	**7.0%**	**6.1%**	**13.0%**	**9.8%**
Manufacturing	Durable Goods	Count	14	266	774	1,448	1,723	1,021	447	131	999	6,823
		Row %	0.2%	3.9%	11.3%	21.2%	25.3%	15.0%	6.6%	1.9%	14.6%	100.0%
		Col %	1.1%	1.5%	2.7%	3.0%	2.8%	2.1%	2.1%	2.1%	1.6%	2.3%
	Nondurable Goods	Count	21	381	718	1,393	1,924	1,802	781	165	1,267	8,452
		Row %	0.2%	4.5%	8.5%	16.5%	22.8%	21.3%	9.2%	2.0%	15.0%	100.0%
		Col %	1.7%	2.2%	2.5%	2.9%	3.1%	3.8%	3.7%	2.6%	2.0%	2.9%
	Total	**Count**	**35**	**647**	**1,492**	**2,841**	**3,647**	**2,823**	**1,228**	**296**	**2,266**	**15,275**
		Row %	**0.2%**	**4.2%**	**9.8%**	**18.6%**	**23.9%**	**18.5%**	**8.0%**	**1.9%**	**14.8%**	**100.0%**
		Col %	**2.8%**	**3.7%**	**5.3%**	**5.9%**	**6.0%**	**5.9%**	**5.8%**	**4.7%**	**3.6%**	**5.2%**
Transportation, Communications & Public Utilities (TCPU)	Transportation	Count	17	149	445	1,445	1,949	1,477	805	239	1,412	7,938
		Row %	0.2%	1.9%	5.6%	18.2%	24.6%	18.6%	10.1%	3.0%	17.8%	100.0%
		Col %	1.3%	0.8%	1.6%	3.0%	3.2%	3.1%	3.8%	3.8%	2.2%	2.7%
	Communications & Public Utilities	Count	7	77	236	757	1,787	1,691	592	50	670	5,867
		Row %	0.1%	1.3%	4.0%	12.9%	30.5%	28.8%	10.1%	0.9%	11.4%	100.0%
		Col %	0.6%	0.4%	0.8%	1.6%	2.9%	3.5%	2.8%	0.8%	1.1%	2.0%
	Total	**Count**	**24**	**226**	**681**	**2,202**	**3,736**	**3,168**	**1,397**	**289**	**2,082**	**13,805**
		Row %	**0.2%**	**1.6%**	**4.9%**	**16.0%**	**27.1%**	**22.9%**	**10.1%**	**2.1%**	**15.1%**	**100.0%**
		Col %	**1.9%**	**1.3%**	**2.4%**	**4.5%**	**6.1%**	**6.6%**	**6.6%**	**4.6%**	**3.3%**	**4.7%**
Wholesale Trade	Durable Goods	Count	5	138	475	1,039	1,401	965	382	113	721	5,239
		Row %	0.1%	2.6%	9.1%	19.8%	26.7%	18.4%	7.3%	2.2%	13.8%	100.0%
		Col %	0.4%	0.8%	1.7%	2.1%	2.3%	2.0%	1.8%	1.8%	1.1%	1.8%
	Nondurable Goods	Count	17	154	353	858	998	715	341	113	670	4,219
		Row %	0.4%	3.7%	8.4%	20.3%	23.7%	16.9%	8.1%	2.7%	15.9%	100.0%
		Col %	1.3%	0.9%	1.3%	1.8%	1.6%	1.5%	1.6%	1.8%	1.1%	1.4%

**Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table C: Individuals by Age and Primary Industry, 1998 (Continued)

Primary Industry*	Industry		Age Group <16	16-19	20-24	25-34	35-44	45-54	55-64	65+	N/A	Table Total
Wholesale Trade (Continued)	**Total**	**Count**	**22**	**292**	**828**	**1,897**	**2,399**	**1,680**	**723**	**226**	**1,391**	**9,458**
		Row %	**0.2%**	**3.1%**	**8.8%**	**20.1%**	**25.4%**	**17.8%**	**7.6%**	**2.4%**	**14.7%**	**100.0%**
		Col %	**1.7%**	**1.7%**	**2.9%**	**3.9%**	**3.9%**	**3.5%**	**3.4%**	**3.6%**	**2.2%**	**3.2%**
Retail Trade	Building Materials & Garden Supplies	Count	9	177	373	541	512	368	176	67	503	2,726
		Row %	0.3%	6.5%	13.7%	19.8%	18.8%	13.5%	6.5%	2.5%	18.5%	100.0%
		Col %	0.7%	1.0%	1.3%	1.1%	0.8%	0.8%	0.8%	1.1%	0.8%	0.9%
	General Merchandise Stores	Count	5	793	1,004	941	931	786	442	167	1,891	6,960
		Row %	0.1%	11.4%	14.4%	13.5%	13.4%	11.3%	6.4%	2.4%	27.2%	100.0%
		Col %	0.4%	4.5%	3.6%	1.9%	1.5%	1.6%	2.1%	2.7%	3.0%	2.4%
	Food Stores	Count	49	1,160	1,019	1,201	1,381	835	411	105	1,484	7,645
		Row %	0.6%	15.2%	13.3%	15.7%	18.1%	10.9%	5.4%	1.4%	19.4%	100.0%
		Col %	3.9%	6.6%	3.6%	2.5%	2.3%	1.7%	1.9%	1.7%	2.3%	2.6%
	Auto Dealers & Service Stations	Count	45	971	1,569	2,151	2,158	1,368	684	280	1,993	11,219
		Row %	0.4%	8.7%	14.0%	19.2%	19.2%	12.2%	6.1%	2.5%	17.8%	100.0%
		Col %	3.6%	5.5%	5.6%	4.4%	3.5%	2.9%	3.2%	4.5%	3.1%	3.8%
	Apparel & Accessory Stores	Count	7	197	354	295	218	164	91	64	678	2,068
		Row %	0.3%	9.5%	17.1%	14.3%	10.5%	7.9%	4.4%	3.1%	32.8%	100.0%
		Col %	0.6%	1.1%	1.3%	0.6%	0.4%	0.3%	0.4%	1.0%	1.1%	0.7%
	Furniture & Home Furnishing Stores	Count	8	177	326	358	345	232	102	44	402	1,994
		Row %	0.4%	8.9%	16.3%	18.0%	17.3%	11.6%	5.1%	2.2%	20.2%	100.0%
		Col %	0.6%	1.0%	1.2%	0.7%	0.6%	0.5%	0.5%	0.7%	0.6%	0.7%
	Eating & Drinking Places	Count	400	4,986	3,796	3,662	2,522	1,309	635	247	7,536	25,093
		Row %	1.6%	19.9%	15.1%	14.6%	10.1%	5.2%	2.5%	1.0%	30.0%	100.0%
		Col %	31.7%	28.2%	13.4%	7.5%	4.1%	2.7%	3.0%	4.0%	11.8%	8.5%
	Miscellaneous Retail	Count	34	410	773	1,042	1,150	877	462	232	1,602	6,582
		Row %	0.5%	6.2%	11.7%	15.8%	17.5%	13.3%	7.0%	3.5%	24.3%	100.0%
		Col %	2.7%	2.3%	2.7%	2.1%	1.9%	1.8%	2.2%	3.7%	2.5%	2.2%
	Total	**Count**	**557**	**8,871**	**9,214**	**10,191**	**9,217**	**5,939**	**3,003**	**1,206**	**16,089**	**64,287**
		Row %	**0.9%**	**13.8%**	**14.3%**	**15.9%**	**14.3%**	**9.2%**	**4.7%**	**1.9%**	**25.0%**	**100.0%**
		Col %	**44.2%**	**50.3%**	**32.6%**	**21.0%**	**15.1%**	**12.4%**	**14.2%**	**19.3%**	**25.3%**	**21.7%**
Finance, Insurance & Real Estate (FIRE)	Finance	Count	9	111	430	1,019	1,289	982	405	122	756	5,123
		Row %	0.2%	2.2%	8.4%	19.9%	25.2%	19.2%	7.9%	2.4%	14.8%	100.0%
		Col %	0.7%	0.6%	1.5%	2.1%	2.1%	2.1%	1.9%	2.0%	1.2%	1.7%
	Insurance	Count	8	60	258	656	670	587	233	62	390	2,924
		Row %	0.3%	2.1%	8.8%	22.4%	22.9%	20.1%	8.0%	2.1%	13.3%	100.0%
		Col %	0.6%	0.3%	0.9%	1.4%	1.1%	1.2%	1.1%	1.0%	0.6%	1.0%
	Real Estate	Count	2	116	189	327	461	375	233	169	586	2,458
		Row %	0.1%	4.7%	7.7%	13.3%	18.8%	15.3%	9.5%	6.9%	23.8%	100.0%
		Col %	0.2%	0.7%	0.7%	0.7%	0.8%	0.8%	1.1%	2.7%	0.9%	0.8%
	Total	**Count**	**19**	**287**	**877**	**2,002**	**2,420**	**1,944**	**871**	**353**	**1,732**	**10,505**
		Row %	**0.2%**	**2.7%**	**8.3%**	**19.1%**	**23.0%**	**18.5%**	**8.3%**	**3.4%**	**16.5%**	**100.0%**
		Col %	**1.5%**	**1.6%**	**3.1%**	**4.1%**	**4.0%**	**4.1%**	**4.1%**	**5.7%**	**2.7%**	**3.6%**
Services	Hotels & Other Lodging Places	Count	152	1,132	1,337	1,880	1,673	1,155	679	298	8,846	17,152
		Row %	0.9%	6.6%	7.8%	11.0%	9.8%	6.7%	4.0%	1.7%	51.6%	100.0%
		Col %	12.1%	6.4%	4.7%	3.9%	2.7%	2.4%	3.2%	4.8%	13.9%	5.8%
	Personal Services	Count	16	117	248	510	477	343	177	65	606	2,559
		Row %	0.6%	4.6%	9.7%	19.9%	18.6%	13.4%	6.9%	2.5%	23.7%	100.0%
		Col %	1.3%	0.7%	0.9%	1.1%	0.8%	0.7%	0.8%	1.0%	1.0%	0.9%
	Business Services	Count	32	784	1,580	2,062	1,882	1,201	601	201	2,605	10,948
		Row %	0.3%	7.2%	14.4%	18.8%	17.2%	11.0%	5.5%	1.8%	23.8%	100.0%
		Col %	2.5%	4.4%	5.6%	4.2%	3.1%	2.5%	2.9%	3.2%	4.1%	3.7%
	Auto Repair, Services, Parking	Count	19	224	351	573	459	271	149	59	538	2,643
		Row %	0.7%	8.5%	13.3%	21.7%	17.4%	10.3%	5.6%	2.2%	20.4%	100.0%
		Col %	1.5%	1.3%	1.2%	1.2%	0.8%	0.6%	0.7%	0.9%	0.8%	0.9%
	Miscellaneous Repair Services	Count	3	39	117	204	256	174	83	31	199	1,106
		Row %	0.3%	3.5%	10.6%	18.4%	23.1%	15.7%	7.5%	2.8%	18.0%	100.0%
		Col %	0.2%	0.2%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.3%	0.4%
	Motion Pictures	Count	7	237	162	87	75	43	14	5	288	918
		Row %	0.8%	25.8%	17.6%	9.5%	8.2%	4.7%	1.5%	0.5%	31.4%	100.0%
		Col %	0.6%	1.3%	0.6%	0.2%	0.1%	0.1%	0.1%	0.1%	0.5%	0.3%

**Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Table C: Individuals by Age and Primary Industry, 1998 (Continued)

Primary Industry*	Industry		Age Group <16	16-19	20-24	25-34	35-44	45-54	55-64	65+	N/A	Table Total
Services (Continued)	Amusement & Recreation Services	Count	49	310	443	579	525	378	184	120	1,752	4,340
		Row %	1.1%	7.1%	10.2%	13.3%	12.1%	8.7%	4.2%	2.8%	40.4%	100.0%
		Col %	3.9%	1.8%	1.6%	1.2%	0.9%	0.8%	0.9%	1.9%	2.8%	1.5%
	Health Services	Count	13	334	1,001	2,323	3,069	2,331	917	203	2,054	12,245
		Row %	0.1%	2.7%	8.2%	19.0%	25.1%	19.0%	7.5%	1.7%	16.8%	100.0%
		Col %	1.0%	1.9%	3.5%	4.8%	5.0%	4.9%	4.3%	3.3%	3.2%	4.1%
	Legal Services	Count	2	39	85	314	381	346	86	33	242	1,528
		Row %	0.1%	2.6%	5.6%	20.5%	24.9%	22.6%	5.6%	2.2%	15.8%	100.0%
		Col %	0.2%	0.2%	0.3%	0.6%	0.6%	0.7%	0.4%	0.5%	0.4%	0.5%
	Educational Services	Count	6	26	49	176	201	139	55	9	662	1,323
		Row %	0.5%	2.0%	3.7%	13.3%	15.2%	10.5%	4.2%	0.7%	50.0%	100.0%
		Col %	0.5%	0.1%	0.2%	0.4%	0.3%	0.3%	0.3%	0.1%	1.0%	0.4%
	Social Services	Count	10	297	882	1,484	1,410	1,141	502	186	1,094	7,006
		Row %	0.1%	4.2%	12.6%	21.2%	20.1%	16.3%	7.2%	2.7%	15.6%	100.0%
		Col %	0.8%	1.7%	3.1%	3.1%	2.3%	2.4%	2.4%	3.0%	1.7%	2.4%
	Museums, Botanical Gardens	Count	1	24	38	44	55	58	53	28	76	377
		Row %	0.3%	6.4%	10.1%	11.7%	14.6%	15.4%	14.1%	7.4%	20.2%	100.0%
		Col %	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	0.4%	0.1%	0.1%
	Membership Organizations	Count	16	170	235	440	551	440	239	122	483	2,696
		Row %	0.6%	6.3%	8.7%	16.3%	20.4%	16.3%	8.9%	4.5%	17.9%	100.0%
		Col %	1.3%	1.0%	0.8%	0.9%	0.9%	0.9%	1.1%	2.0%	0.8%	0.9%
	Engineering & Management Services	Count	11	98	377	841	1,037	803	306	113	1,015	4,601
		Row %	0.2%	2.1%	8.2%	18.3%	22.5%	17.5%	6.7%	2.5%	22.1%	100.0%
		Col %	0.9%	0.6%	1.3%	1.7%	1.7%	1.7%	1.5%	1.8%	1.6%	1.6%
	Private Households	Count	1	16	40	90	142	149	102	62	178	780
		Row %	0.1%	2.1%	5.1%	11.5%	18.2%	19.1%	13.1%	7.9%	22.8%	100.0%
		Col %	0.1%	0.1%	0.1%	0.2%	0.2%	0.3%	0.5%	1.0%	0.3%	0.3%
	Services, Not Elsewhere Classified	Count		2	2	33	27	22	10	10	47	153
		Row %		1.3%	1.3%	21.6%	17.6%	14.4%	6.5%	6.5%	30.7%	100.0%
		Col %		0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%
	Total	**Count**	**338**	**3,849**	**6,947**	**11,640**	**12,220**	**8,994**	**4,157**	**1,545**	**20,685**	**70,375**
		Row %	**0.5%**	**5.5%**	**9.9%**	**16.5%**	**17.4%**	**12.8%**	**5.9%**	**2.2%**	**29.4%**	**100.0%**
		Col %	**26.8%**	**21.8%**	**24.6%**	**24.0%**	**20.0%**	**18.8%**	**19.7%**	**24.8%**	**32.5%**	**23.8%**
Government	Federal Govt. Public Administration	Count		11	108	100	17	4	2		6	248
		Row %		4.4%	43.5%	40.3%	6.9%	1.6%	0.8%		2.4%	100.0%
		Col %		0.1%	0.4%	0.2%	0.0%	0.0%	0.0%		0.0%	0.1%
	Federal Govt. Other	Count	1	3	55	155	155	131	59	8	76	643
		Row %	0.2%	0.5%	8.6%	24.1%	24.1%	20.4%	9.2%	1.2%	11.8%	100.0%
		Col %	0.1%	0.0%	0.2%	0.3%	0.3%	0.3%	0.3%	0.1%	0.1%	0.2%
	State Govt. Public Administration	Count		80	276	1,141	1,758	2,040	829	141	434	6,699
		Row %		1.2%	4.1%	17.0%	26.2%	30.5%	12.4%	2.1%	6.5%	100.0%
		Col %		0.5%	1.0%	2.4%	2.9%	4.3%	3.9%	2.3%	0.7%	2.3%
	State Govt. Other	Count	23	137	486	1,062	1,646	1,567	682	122	580	6,305
		Row %	0.4%	2.2%	7.7%	16.8%	26.1%	24.9%	10.8%	1.9%	9.2%	100.0%
		Col %	1.8%	0.8%	1.7%	2.2%	2.7%	3.3%	3.2%	2.0%	0.9%	2.1%
	Local Govt. Public Administration	Count	63	682	707	1,599	2,594	2,089	987	454	1,426	10,601
		Row %	0.6%	6.4%	6.7%	15.1%	24.5%	19.7%	9.3%	4.3%	13.5%	100.0%
		Col %	5.0%	3.9%	2.5%	3.3%	4.2%	4.4%	4.7%	7.3%	2.2%	3.6%
	Local Govt. Other	Count	35	646	1,251	4,341	8,159	8,864	3,652	812	3,870	31,630
		Row %	0.1%	2.0%	4.0%	13.7%	25.8%	28.0%	11.5%	2.6%	12.2%	100.0%
		Col %	2.8%	3.7%	4.4%	8.9%	13.3%	18.5%	17.3%	13.0%	6.1%	10.7%
	Total	**Count**	**122**	**1,559**	**2,883**	**8,398**	**14,329**	**14,695**	**6,211**	**1,537**	**6,392**	**56,126**
		Row %	**0.2%**	**2.8%**	**5.1%**	**15.0%**	**25.5%**	**26.2%**	**11.1%**	**2.7%**	**11.4%**	**100.00%**
		Col %	**9.7%**	**8.8%**	**10.2%**	**17.3%**	**23.4%**	**30.7%**	**29.5%**	**24.7%**	**10.0%**	**19.00%**
Not Available	**Total**	**Count**		**8**	**7**	**39**	**23**	**19**	**8**		**59**	**163**
		Row %		**4.9%**	**4.3%**	**23.9%**	**14.1%**	**11.7%**	**4.9%**		**36.2%**	**100.0%**
		Col %		**0.0%**	**0.0%**	**0.1%**	**0.0%**	**0.0%**	**0.0%**		**0.1%**	**0.1%**
Total		**Count**	**1,261**	**17,651**	**28,232**	**48,519**	**61,126**	**47,895**	**21,087**	**6,233**	**63,606**	**295,610**
		Row %	**0.4%**	**6.0%**	**9.6%**	**16.4%**	**20.7%**	**16.2%**	**7.1%**	**2.1%**	**21.5%**	**100.0%**
		Col %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

**Primary Industry refers to the industry where individuals earn the largest share of their wages.*

Appendix D

Table D: Age of Wyoming Population, 1990 - 1999

	YEAR									
	1990		1991		1992		1993		1994	
AGE	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
<16	121,996	26.9%	121,789	26.6%	121,574	26.2%	120,838	25.8%	119,934	25.3%
16-19	27,700	6.1%	28,470	6.2%	29,323	6.3%	30,468	6.5%	31,736	6.7%
20-24	27,846	6.1%	29,118	6.4%	30,576	6.6%	32,106	6.8%	33,495	7.1%
25-34	74,454	16.4%	69,429	15.2%	65,877	14.2%	62,720	13.4%	60,184	12.7%
35-44	73,992	16.3%	77,642	17.0%	79,176	17.1%	80,714	17.2%	82,049	17.3%
45-54	45,226	10.0%	46,731	10.2%	50,446	10.9%	53,578	11.4%	56,899	12.0%
55-64	35,409	7.8%	36,066	7.9%	36,914	8.0%	37,670	8.0%	38,670	8.1%
65+	46,966	10.4%	48,494	10.6%	49,605	10.7%	50,939	10.9%	52,015	11.0%
TOTAL	**453,589**	**100.0%**	**457,739**	**100.0%**	**463,491**	**100.0%**	**469,033**	**100.0%**	**474,982**	**100.0%**
Median Age	32.0		32.6		33.1		33.5		34.0	

Table D: Age of Wyoming Population, 1990 - 1999 (Continued)

	YEAR									
	1995		1996		1997		1998		1999	
AGE	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
<16	118,126	24.7%	115,788	24.1%	113,613	23.7%	111,570	23.2%	109,069	22.7%
16-19	32,733	6.8%	34,116	7.1%	34,766	7.2%	35,245	7.3%	35,373	7.4%
20-24	34,438	7.2%	34,700	7.2%	35,153	7.3%	35,622	7.4%	36,149	7.5%
25-34	57,930	12.1%	56,110	11.7%	54,283	11.3%	53,192	11.1%	52,573	11.0%
35-44	82,436	17.2%	81,838	17.0%	79,816	16.6%	77,242	16.1%	74,345	15.5%
45-54	60,021	12.5%	63,103	13.1%	66,088	13.8%	68,463	14.3%	71,140	14.8%
55-64	39,643	8.3%	40,533	8.4%	41,603	8.7%	43,491	9.1%	45,323	9.5%
65+	53,120	11.1%	53,897	11.2%	54,709	11.4%	55,220	11.5%	55,630	11.6%
TOTAL	**478,447**	**100.0%**	**480,085**	**100.0%**	**480,031**	**100.0%**	**480,045**	**100.0%**	**479,602**	**100.0%**
Median Age	34.5		34.9		35.3		35.7		36.1	

Source: Population Estimates Program, U.S. Bureau of the Census. Contact: (301) 457-2422

Appendix E

Tables E: Mean Earnings by Major Industry, Gender, and Age, 1998

AGRICULTURE

Gender	Age Group	Number	Mean Earnings
Male	<16	37	$1,064
	16-19	233	$2,567
	20-24	384	$7,338
	25-34	571	$12,737
	35-44	584	$17,871
	45-54	389	$20,713
	55-64	206	$22,217
	65+	138	$10,872
	N.A.	38	$14,318
	Total	**2,580**	**$13,893**
Female	<16	22	$1,014
	16-19	86	$2,815
	20-24	181	$6,117
	25-34	281	$9,070
	35-44	311	$10,297
	45-54	204	$9,782
	55-64	95	$10,361
	65+	44	$7,696
	N.A.	17	$7,026
	Total	**1,241**	**$8,510**
N.A.	<16		
	16-19		
	20-24		
	25-34	1	$9,910
	35-44		
	45-54	1	$5,194
	55-64		
	65+		
	N.A.	1,559	$6,056
	Total	**1,561**	**$6,058**
Total	<16	59	$1,046
	16-19	319	$2,634
	20-24	565	$6,947
	25-34	853	$11,526
	35-44	895	$15,239
	45-54	594	$16,933
	55-64	301	$18,475
	65+	182	$10,104
	N.A.	1,614	$6,261
	Total	**5,382**	**$10,379**

MINING

Gender	Age Group	Number	Mean Earnings
Male	<16	9	$1,805
	16-19	375	$8,014
	20-24	1,459	$18,204
	25-34	3,018	$30,633
	35-44	5,621	$45,573
	45-54	4,063	$51,819
	55-64	1,528	$45,915
	65+	186	$29,941
	N.A.	154	$50,378
	Total	**16,413**	**$40,957**
Female	<16	8	$1,349
	16-19	69	$5,015
	20-24	193	$9,556
	25-34	351	$23,248
	35-44	766	$33,708
	45-54	484	$33,355
	55-64	176	$29,883
	65+	30	$17,783
	N.A.	18	$22,719
	Total	**2,095**	**$27,937**
N.A.	<16		
	16-19		
	20-24	1	$3,374
	25-34		
	35-44	2	$1,413
	45-54	1	$26,524
	55-64		
	65+		
	N.A.	2,879	$21,714
	Total	**2,883**	**$21,695**
Total	<16	17	$1,591
	16-19	444	$7,548
	20-24	1,653	$17,185
	25-34	3,369	$29,864
	35-44	6,389	$44,136
	45-54	4,548	$49,848
	55-64	1,704	$44,259
	65+	216	$28,253
	N.A.	3,051	$23,166
	Total	**21,391**	**$37,085**

Tables E: Mean Earnings by Major Industry, Gender, and Age, 1998 (Continued)

CONSTRUCTION

Gender	Age Group	Number	Mean Earnings
Male	<16	51	$1,714
	16-19	1,037	$4,959
	20-24	2,808	$11,338
	25-34	4,573	$17,435
	35-44	5,088	$22,131
	45-54	3,058	$24,171
	55-64	1,288	$23,497
	65+	325	$15,617
	N.A.	185	$17,297
	Total	**18,413**	**$18,566**
Female	<16	17	$3,461
	16-19	110	$3,993
	20-24	276	$6,405
	25-34	510	$10,221
	35-44	759	$14,679
	45-54	432	$14,773
	55-64	195	$15,740
	65+	58	$10,779
	N.A.	12	$11,453
	Total	**2,369**	**$12,171**
N.A.	<16		
	16-19	2	$4,243
	20-24	1	$2,814
	25-34	4	$892
	35-44	4	$17,817
	45-54	1	$6,519
	55-64	1	$6,928
	65+		
	N.A.	8,048	$7,138
	Total	**8,061**	**$7,139**
Total	<16	68	$2,151
	16-19	1,149	$4,865
	20-24	3,085	$10,894
	25-34	5,087	$16,699
	35-44	5,851	$21,162
	45-54	3,491	$23,003
	55-64	1,484	$22,467
	65+	383	$14,884
	N.A.	8,245	$7,373
	Total	**28,843**	**$14,847**

MANUFACTURING

Gender	Age Group	Number	Mean Earnings
Male	<16	21	$1,943
	16-19	412	$4,705
	20-24	1,053	$11,871
	25-34	2,119	$23,310
	35-44	2,629	$34,811
	45-54	2,128	$42,227
	55-64	907	$40,768
	65+	191	$21,763
	N.A.	127	$33,910
	Total	**9,587**	**$30,321**
Female	<16	14	$1,661
	16-19	235	$3,587
	20-24	436	$7,756
	25-34	721	$14,914
	35-44	1,017	$17,611
	45-54	695	$19,352
	55-64	321	$16,633
	65+	105	$11,372
	N.A.	36	$15,348
	Total	**3,580**	**$14,929**
N.A.	<16		
	16-19		
	20-24	3	$8,203
	25-34	1	$282
	35-44	1	$50,292
	45-54		
	55-64		
	65+		
	N.A.	2,103	$15,159
	Total	**2,108**	**$15,158**
Total	<16	35	$1,830
	16-19	647	$4,299
	20-24	1,492	$10,661
	25-34	2,841	$21,171
	35-44	3,647	$30,018
	45-54	2,823	$36,596
	55-64	1,228	$34,459
	65+	296	$18,077
	N.A.	2,266	$16,213
	Total	**15,275**	**$24,621**

TRANSPORTATION, COMMUNICATIONS & PUBLIC UTILITIES (TCPU)

Gender	Age Group	Number	Mean Earnings
Male	<16	13	$2,078
	16-19	160	$4,886
	20-24	468	$13,509
	25-34	1,572	$23,098
	35-44	2,826	$36,578
	45-54	2,480	$40,878
	55-64	1,146	$33,970
	65+	242	$12,130
	N.A.	110	$35,461
	Total	**9,017**	**$32,600**
Female	<16	11	$1,800
	16-19	66	$4,040
	20-24	212	$9,511
	25-34	630	$14,364
	35-44	908	$22,322
	45-54	687	$23,777
	55-64	251	$19,095
	65+	46	$10,680
	N.A.	31	$14,844
	Total	**2,842**	**$18,895**
N.A.	<16		
	16-19		
	20-24	1	$2,452
	25-34		
	35-44	2	$27,726
	45-54	1	$19,952
	55-64		
	65+	1	$33,218
	N.A.	1,941	$14,519
	Total	**1,946**	**$14,539**
Total	<16	24	$1,951
	16-19	226	$4,639
	20-24	681	$12,248
	25-34	2,202	$20,599
	35-44	3,736	$33,109
	45-54	3,168	$37,163
	55-64	1,397	$31,297
	65+	289	$11,972
	N.A.	2,082	$15,630
	Total	**13,805**	**$27,233**

WHOLESALE TRADE

Gender	Age Group	Number	Mean Earnings
Male	<16	12	$1,044
	16-19	207	$4,687
	20-24	627	$14,487
	25-34	1,441	$24,892
	35-44	1,742	$33,106
	45-54	1,239	$39,791
	55-64	536	$35,292
	65+	170	$21,759
	N.A.	69	$29,737
	Total	**6,043**	**$29,385**
Female	<16	10	$861
	16-19	85	$4,458
	20-24	201	$8,617
	25-34	454	$14,055
	35-44	657	$16,091
	45-54	441	$18,222
	55-64	187	$14,279
	65+	56	$6,804
	N.A.	17	$12,068
	Total	**2,108**	**$14,404**
N.A.	<16		
	16-19		
	20-24		
	25-34	2	$24,275
	35-44		
	45-54		
	55-64		
	65+		
	N.A.	1,305	$17,705
	Total	**1,307**	**$17,715**
Total	<16	22	$961
	16-19	292	$4,620
	20-24	828	$13,062
	25-34	1,897	$22,298
	35-44	2,399	$28,446
	45-54	1,680	$34,129
	55-64	723	$29,857
	65+	226	$18,053
	N.A.	1,391	$18,233
	Total	**9,458**	**$24,433**

Tables E: Mean Earnings by Major Industry, Gender, and Age, 1998 (Continued)

RETAIL TRADE

Gender	Age Group	Number	Mean Earnings
Male	<16	273	$1,198
	16-19	4,048	$3,326
	20-24	3,912	$7,614
	25-34	4,541	$15,069
	35-44	3,391	$22,189
	45-54	2,234	$26,292
	55-64	1,166	$22,428
	65+	562	$12,019
	N.A.	314	$14,736
	Total	**20,441**	**$13,870**
Female	<16	284	$1,232
	16-19	4,812	$3,106
	20-24	5,286	$5,836
	25-34	5,630	$8,486
	35-44	5,816	$11,137
	45-54	3,702	$11,718
	55-64	1,836	$10,030
	65+	644	$6,738
	N.A.	266	$7,745
	Total	**28,276**	**$8,024**
N.A.	<16		
	16-19	11	$2,616
	20-24	16	$4,771
	25-34	20	$5,941
	35-44	10	$11,723
	45-54	3	$23,088
	55-64	1	$963
	65+		
	N.A.	15,509	$5,278
	Total	**15,570**	**$5,284**
Total	<16	557	$1,215
	16-19	8,871	$3,206
	20-24	9,214	$6,589
	25-34	10,191	$11,414
	35-44	9,217	$15,204
	45-54	5,939	$17,206
	55-64	3,003	$14,841
	65+	1,206	$9,199
	N.A.	16,089	$5,503
	Total	**64,287**	**$9,219**

FINANCE, INSURANCE & REAL ESTATE (FIRE)

Gender	Age Group	Number	Mean Earnings
Male	<16	10	$985
	16-19	120	$3,640
	20-24	214	$9,019
	25-34	522	$26,249
	35-44	603	$45,397
	45-54	632	$57,222
	55-64	327	$52,011
	65+	178	$25,830
	N.A.	35	$34,635
	Total	**2,641**	**$38,786**
Female	<16	9	$1,160
	16-19	167	$4,093
	20-24	662	$10,675
	25-34	1,477	$16,570
	35-44	1,817	$20,913
	45-54	1,312	$21,306
	55-64	544	$19,392
	65+	174	$9,904
	N.A.	55	$17,849
	Total	**6,217**	**$17,925**
N.A.	<16		
	16-19		
	20-24	1	$20,514
	25-34	3	$18,957
	35-44		
	45-54		
	55-64		
	65+	1	$4,556
	N.A.	1,642	$18,631
	Total	**1,647**	**$18,624**
Total	<16	19	$1,068
	16-19	287	$3,903
	20-24	877	$10,283
	25-34	2,002	$19,097
	35-44	2,420	$27,014
	45-54	1,944	$32,982
	55-64	871	$31,638
	65+	353	$17,919
	N.A.	1,732	$18,930
	Total	**10,505**	**$23,279**

SERVICES

Gender	Age Group	Number	Mean Earnings
Male	<16	163	$1,193
	16-19	1,605	$3,266
	20-24	2,814	$7,605
	25-34	4,542	$16,636
	35-44	4,079	$26,696
	45-54	3,230	$36,389
	55-64	1,568	$30,692
	65+	727	$13,413
	N.A.	273	$23,010
	Total	19,001	$20,682
Female	<16	175	$1,100
	16-19	2,243	$2,862
	20-24	4,125	$6,471
	25-34	7,080	$11,615
	35-44	8,125	$14,844
	45-54	5,761	$16,099
	55-64	2,587	$13,653
	65+	818	$7,726
	N.A.	326	$10,857
	Total	**31,240**	**$11,974**
N.A.	<16		
	16-19	1	$380
	20-24	8	$846
	25-34	18	$6,902
	35-44	16	$6,927
	45-54	3	$16,951
	55-64	2	$14,137
	65+		
	N.A.	20,086	$7,207
	Total	**20,134**	**$7,205**
Total	<16	338	$1,145
	16-19	3,849	$3,030
	20-24	6,947	$6,924
	25-34	11,640	$13,567
	35-44	12,220	$18,790
	45-54	8,994	$23,386
	55-64	4,157	$20,080
	65+	1,545	$10,402
	N.A.	20,685	$7,473
	Total	**70,375**	**$12,961**

GOVERNMENT

Gender	Age Group	Number	Mean Earnings
Male	<16	63	$2,258
	16-19	747	$2,609
	20-24	1,239	$8,946
	25-34	3,567	$21,234
	35-44	5,050	$28,643
	45-54	5,606	$33,567
	55-64	2,742	$29,382
	65+	705	$11,587
	N.A.	246	$25,990
	Total	19,965	$25,889
Female	<16	59	$488
	16-19	812	$2,990
	20-24	1,642	$7,753
	25-34	4,828	$15,292
	35-44	9,269	$19,077
	45-54	9,086	$22,681
	55-64	3,466	$20,046
	65+	831	$7,520
	N.A.	261	$17,076
	Total	**30,254**	**$18,249**
N.A.	<16		
	16-19		
	20-24	2	$17,799
	25-34	3	$11,609
	35-44	10	$13,680
	45-54	3	$29,741
	55-64	3	$17,838
	65+	1	$7,894
	N.A.	5,885	$12,267
	Total	**5,907**	**$12,282**
Total	<16	122	$1,402
	16-19	1,559	$2,807
	20-24	2,883	$8,273
	25-34	8,398	$17,814
	35-44	14,329	$22,445
	45-54	14,695	$26,835
	55-64	6,211	$24,167
	65+	1,537	$9,385
	N.A.	6,392	$12,992
	Total	**56,126**	**$20,339**

Tables E: Mean Earnings by Major Industry, Gender, and Age, 1998 (Continued)

NOT AVAILABLE (N.A.)

Gender	Age Group	Number	Mean Earnings
Male	<16		
	16-19	4	$1,527
	20-24	4	$2,609
	25-34	17	$12,040
	35-44	10	$4,649
	45-54	13	$6,444
	55-64	2	$1,740
	65+		
	N.A.		
	Total	**50**	**$7,099**
Female	<16		
	16-19	4	$1,642
	20-24	3	$2,098
	25-34	22	$4,390
	35-44	13	$5,317
	45-54	6	$4,107
	55-64	6	$2,340
	65+		
	N.A.	1	$1,967
	Total	**55**	**$3,986**
N.A.	<16		
	16-19		
	20-24		
	25-34		
	35-44		
	45-54		
	55-64		
	65+		
	N.A.	58	$2,695
	Total	**58**	**$2,695**
Total	<16		
	16-19	8	$1,584
	20-24	7	$2,390
	25-34	39	$7,725
	35-44	23	$5,026
	45-54	19	$5,706
	55-64	8	$2,190
	65+		
	N.A.	59	$2,683
	Total	**163**	**$4,481**

TOTAL ALL INDUSTRIES

Gender	Age Group	Number	Mean Earnings
Male	<16	652	$1,376
	16-19	8,948	$3,748
	20-24	14,982	$10,234
	25-34	26,483	$20,189
	35-44	31,623	$31,242
	45-54	25,072	$37,243
	55-64	11,416	$32,557
	65+	3,424	$15,248
	N.A.	1,551	$25,968
	Total	**124,151**	**$25,036**
Female	<16	609	$1,191
	16-19	8,689	$3,107
	20-24	13,217	$6,748
	25-34	21,984	$12,305
	35-44	29,458	$16,606
	45-54	22,810	$18,962
	55-64	9,664	$16,131
	65+	2,806	$7,910
	N.A.	1,040	$12,426
	Total	**110,277**	**$13,604**
N.A.	<16		
	16-19	14	$2,689
	20-24	33	$5,226
	25-34	52	$7,636
	35-44	45	$12,104
	45-54	13	$20,579
	55-64	7	$12,811
	65+	3	$15,223
	N.A.	61,015	$8,885
	Total	**61,182**	**$8,886**
Total	<16	1,261	$1,286
	16-19	17,651	$3,432
	20-24	28,232	$8,597
	25-34	48,519	$16,603
	35-44	61,126	$24,175
	45-54	47,895	$28,532
	55-64	21,087	$25,023
	65+	6,233	$11,944
	N.A.	63,606	$9,360
	Total	**295,610**	**$17,429**

Appendix F

Tables F: Employment Utilization by Labor Attachment and Industry, 1998

Primary Industry	Industry	Utilization Index	Attachment to the Labor Market: Steady Worker Same Employer	Steady Worker Different Employer	Multiple Job Holder	Job Changer	Two Quarter Worker	One Quarter Worker	Total
Agriculture	**Total**	**67.7%**	**2,000**	**194**	**600**	**310**	**991**	**1,287**	**5,382**
Mining	Metal Mining	84.5%	523	26	105	76	90	92	912
	Coal Mining	90.2%	3,387	100	483	741	271	341	5,323
	Oil & Gas Extraction	79.3%	5,549	499	1,631	1,020	1,155	1,905	11,759
	Nonmetallic Minerals Mining	91.1%	2,606	55	276	91	170	199	3,397
	Total	**84.1%**	**12,065**	**680**	**2,495**	**1,928**	**1,686**	**2,537**	**21,391**
Construction	General Building Contractors	67.8%	2,020	371	1,001	594	1,152	1,648	6,786
	Heavy Construction	63.9%	2,524	503	1,322	731	1,477	2,952	9,509
	Special Trade Construction	68.6%	4,036	641	1,832	1,006	1,847	3,186	12,548
	Total	**66.9%**	**8,580**	**1,515**	**4,155**	**2,331**	**4,476**	**7,786**	**28,843**
Manufacturing	Durable Goods	80.4%	3,518	265	882	553	709	896	6,823
	Nondurable Goods	83.3%	4,876	255	1,144	476	788	913	8,452
	Total	**82.0%**	**8,394**	**520**	**2,026**	**1,029**	**1,497**	**1,809**	**15,275**
Transportation, Communications & Public Utilities (TCPU)	Transportation	77.8%	3,693	262	1,163	607	915	1,298	7,938
	Communications & Public Utilities	87.3%	3,958	105	615	321	444	424	5,867
	Total	**81.8%**	**7,651**	**367**	**1,778**	**928**	**1,359**	**1,722**	**13,805**
Wholesale Trade	Durable Goods	84.5%	3,063	201	584	452	348	591	5,239
	Nondurable Goods	80.3%	1,974	152	588	485	432	588	4,219
	Total	**82.7%**	**5,037**	**353**	**1,172**	**937**	**780**	**1,179**	**9,458**
Retail Trade	Building Materials & Garden Supplies	78.1%	1,256	111	362	264	340	393	2,726
	General Merchandise Stores	70.1%	2,404	311	960	407	1,662	1,216	6,960
	Food Stores	76.5%	2,929	514	1,306	754	1,047	1,095	7,645
	Auto Dealers & Service Stations	76.9%	4,534	597	1,744	1,164	1,487	1,693	11,219
	Apparels & Accessory Stores	69.8%	629	86	407	156	350	440	2,068
	Furniture & Home Furnishing Stores	75.6%	821	93	303	185	230	362	1,994
	Eating & Drinking Places	66.4%	6,307	1,499	4,607	2,063	4,732	5,885	25,093
	Miscellaneous Retail	73.2%	2,550	261	1,065	472	1,004	1,230	6,582
	Total	**71.4%**	**21,430**	**3,472**	**10,754**	**5,465**	**10,852**	**12,314**	**64,287**
Finance, Insurance & Real Estate (FIRE)	Finance	86.7%	3,073	111	761	406	361	411	5,123
	Insurance	86.6%	1,738	80	414	232	221	239	2,924
	Real Estate	73.2%	893	108	415	219	341	482	2,458
	Total	**83.5%**	**5,704**	**299**	**1,590**	**857**	**923**	**1,132**	**10,505**
Services	Hotels & Other Lodging Places	60.9%	4,291	749	2,115	890	4,879	4,228	17,152
	Personal Services	73.7%	999	95	414	196	356	499	2,559
	Business Services	63.9%	2,531	601	1,792	981	1,767	3,276	10,948
	Auto Repair, Services, Parking	74.9%	1,154	114	341	217	296	521	2,643
	Miscellaneous Repair Services	79.5%	527	38	143	115	120	163	1,106
	Motion Pictures	70.0%	263	50	189	78	148	190	918
	Amusement & Recreation Services	61.4%	1,000	187	757	235	950	1,211	4,340
	Health Services	82.0%	5,742	382	2,261	1,251	1,091	1,518	12,245
	Legal Services	82.4%	822	45	243	95	120	203	1,528
	Educational Services	64.9%	557	20	92	32	200	422	1,323
	Social Services	77.8%	3,006	286	1,260	493	947	1,014	7,006
	Museums, Botanical Gardens	76.2%	177	9	60	13	71	47	377
	Membership Organizations	72.1%	1,156	93	339	152	450	506	2,696
	Engineering & Management Services	78.2%	2,330	130	495	373	520	753	4,601
	Private Households	74.2%	296	28	154	49	112	141	780
	Services, Not Elsewhere Classified	73.0%	66	6	20	14	12	35	153
	Total	**70.5%**	**24,917**	**2,833**	**10,675**	**5,184**	**12,039**	**14,727**	**70,375**
Government	Federal Govt. Public Administration	67.9%	87	14	23	26	45	53	248
	Federal Govt. Other	68.2%	226	44	72	56	161	84	643
	State Govt. Public Administration	92.8%	4,712	117	932	358	343	237	6,699
	State Govt. Other	87.6%	4,202	105	705	228	695	370	6,305
	Local Govt. Public Administration	81.3%	5,579	266	1,682	555	988	1,531	10,601
	Local Govt. Other	84.2%	18,531	500	5,148	1,177	2,757	3,517	31,630
	Total	**84.8%**	**33,337**	**1,046**	**8,562**	**2,400**	**4,989**	**5,792**	**56,126**
Not Available	**Total**	**41.9%**	**0**	**12**	**22**	**5**	**37**	**87**	**163**
Total	**Total**	**75.9%**	**129,115**	**11,291**	**43,829**	**21,374**	**39,629**	**50,372**	**295,610**

Appendix G

Tables G: Individuals' Attachment to the Labor Market by Age and Gender, 1998

Age Group	Gender		Attachment to the Labor Market: Steady Worker Same Employer	Steady Worker Different Employer	Multiple Job Holder	Job Changer	Two Quarter Worker	One Quarter Worker	Total
<16	Male	Count	117	15	17	13	217	273	652
		Row %	17.9%	2.3%	2.6%	2.0%	33.3%	41.9%	100.0%
		Col %	0.1%	0.1%	0.0%	0.1%	0.5%	0.5%	0.2%
	Female	Count	113	10	27	18	219	222	609
		Row %	18.6%	1.6%	4.4%	3.0%	36.0%	36.5%	100.0%
		Col %	0.1%	0.1%	0.1%	0.1%	0.6%	0.4%	0.2%
	Total	**Count**	**230**	**25**	**44**	**31**	**436**	**495**	**1,261**
		Row %	18.2%	2.0%	3.5%	2.5%	34.6%	39.3%	100.0%
		Col %	0.2%	0.2%	0.1%	0.1%	1.1%	1.0%	0.4%
16-19	Male	Count	1,620	890	1,544	872	2,355	1,667	8,948
		Row %	18.1%	9.9%	17.3%	9.7%	26.3%	18.6%	100.0%
		Col %	1.3%	7.9%	3.5%	4.1%	5.9%	3.3%	3.0%
	Female	Count	1,631	809	1,786	918	2,116	1,429	8,689
		Row %	18.8%	9.3%	20.6%	10.6%	24.4%	16.4%	100.0%
		Col %	1.3%	7.2%	4.1%	4.3%	5.3%	2.8%	2.9%
	N.A.	Count	0	3	2	1	5	3	14
		Row %	0	21.40%	14.30%	7.10%	35.70%	21.40%	100.00%
		Col %	0	0	0	0	0	0	0
	Total	**Count**	**3,251**	**1,702**	**3,332**	**1,791**	**4,476**	**3,099**	**17,651**
		Row %	18.4%	9.6%	18.9%	10.1%	25.4%	17.6%	100.0%
		Col %	2.5%	15.1%	7.6%	8.4%	11.3%	6.2%	6.0%
20-24	Male	Count	3,724	1,245	3,695	1,763	2,587	1,968	14,982
		Row %	24.9%	8.3%	24.7%	11.8%	17.3%	13.1%	100.0%
		Col %	2.9%	11.0%	8.4%	8.2%	6.5%	3.9%	5.1%
	Female	Count	3,162	977	3,541	1,544	2,275	1,718	13,217
		Row %	23.9%	7.4%	26.8%	11.7%	17.2%	13.0%	100.0%
		Col %	2.4%	8.7%	8.1%	7.2%	5.7%	3.4%	4.5%
	N.A.	Count	10	3	4	1	9	6	33
		Row %	30.3%	9.1%	12.1%	3.0%	27.3%	18.2%	100.0%
		Col %	0	0	0	0	0	0	0
	Total	**Count**	**6,896**	**2,225**	**7,240**	**3,308**	**4,871**	**3,692**	**28,232**
		Row %	24.4%	7.9%	25.6%	11.7%	17.3%	13.1%	100.0%
		Col %	5.3%	19.7%	16.5%	15.5%	12.3%	7.3%	9.6%
25-34	Male	Count	11,615	1,338	5,318	2,788	2,738	2,686	26,483
		Row %	43.9%	5.1%	20.1%	10.5%	10.3%	10.1%	100.0%
		Col %	9.0%	11.9%	12.1%	13.0%	6.9%	5.3%	9.0%
	Female	Count	9,014	1,054	4,763	2,139	2,583	2,431	21,984
		Row %	41.0%	4.8%	21.7%	9.7%	11.7%	11.1%	100.0%
		Col %	7.0%	9.3%	10.9%	10.0%	6.5%	4.8%	7.4%
	N.A.	Count	17	3	4	5	6	17	52
		Row %	32.7%	5.8%	7.7%	9.6%	11.5%	32.7%	100.0%
		Col %	0	0	0	0	0	0	0
	Total	**Count**	**20,646**	**2,395**	**10,085**	**4,932**	**5,327**	**5,134**	**48,519**
		Row %	42.6%	4.9%	20.8%	10.2%	11.0%	10.6%	100.0%
		Col %	16.0%	21.2%	23.0%	23.1%	13.4%	10.2%	16.4%
35-44	Male	Count	18,770	1,080	4,415	2,645	2,348	2,365	31,623
		Row %	59.4%	3.4%	14.0%	8.4%	7.4%	7.5%	100.0%
		Col %	14.5%	9.6%	10.1%	12.4%	5.9%	4.7%	10.7%
	Female	Count	16,135	902	5,439	2,319	2,444	2,219	29,458
		Row %	54.8%	3.1%	18.5%	7.9%	8.3%	7.5%	100.0%
		Col %	12.5%	8.0%	12.4%	10.8%	6.2%	4.4%	10.0%
	N.A.	Count	22	3	5	2	5	8	45
		Row %	48.9%	6.7%	11.1%	4.4%	11.1%	17.8%	100.0%
		Col %	0	0	0	0	0	0	0
	Total	**Count**	**34,927**	**1,985**	**9,859**	**4,966**	**4,797**	**4,592**	**61,126**
		Row %	57.1%	3.2%	16.1%	8.1%	7.8%	7.5%	100.0%
		Col %	27.1%	17.6%	22.5%	23.2%	12.1%	9.1%	20.7%

Tables G: Individuals' Attachment to the Labor Market by Age and Gender, 1998 (Continued)

Age Group	Gender		Attachment to the Labor Market: Steady Worker Same Employer	Steady Worker Different Employer	Multiple Job Holder	Job Changer	Two Quarter Worker	One Quarter Worker	Total
45-54	Male	Count	16,842	612	2,745	1,618	1,627	1,628	25,072
		Row %	67.2%	2.4%	10.9%	6.5%	6.5%	6.5%	100.0%
		Col %	13.0%	5.4%	6.3%	7.6%	4.1%	3.2%	8.5%
	Female	Count	14,379	539	3,526	1,374	1,540	1,452	22,810
		Row %	63.0%	2.4%	15.5%	6.0%	6.8%	6.4%	100.0%
		Col %	11.1%	4.8%	8.0%	6.4%	3.9%	2.9%	7.7%
	N.A.	Count	11	0	0	0	1	1	13
		Row %	84.6%	0	0	0	7.7%	7.7%	100.0%
		Col %	0.0%	0	0	0	0	0	0
	Total	**Count**	**31,232**	**1,151**	**6,271**	**2,992**	**3,168**	**3,081**	**47,895**
		Row %	65.2%	2.4%	13.1%	6.2%	6.6%	6.4%	100.0%
		Col %	24.2%	10.2%	14.3%	14.0%	8.0%	6.1%	16.2%
55-64	Male	Count	7,535.00	237.00	992.00	652.00	983.00	1,017.00	11,416.00
		Row %	66.0%	2.1%	8.7%	5.7%	8.6%	8.9%	100.0%
		Col %	5.8%	2.1%	2.3%	3.1%	2.5%	2.0%	3.9%
	Female	Count	6,112.00	204.00	1,098.00	491.00	844.00	915.00	9,664.00
		Row %	63.2%	2.1%	11.4%	5.1%	8.7%	9.5%	100.0%
		Col %	4.7%	1.8%	2.5%	2.3%	2.1%	1.8%	3.3%
	N.A.	Count	3	0	1	0	1	2	7
		Row %	42.9%	0	14.3%	0	14.3%	28.6%	100.0%
		Col %	0	0	0	0	0	0	0
	Total	**Count**	**13,650.00**	**441.00**	**2,091.00**	**1,143.00**	**1,828.00**	**1,934.00**	**21,087.00**
		Row %	64.7%	2.1%	9.9%	5.4%	8.7%	9.2%	100.0%
		Col %	10.6%	3.9%	4.8%	5.3%	4.6%	3.8%	7.1%
65+	Male	Count	1,953	56	221	134	458	602	3,424
		Row %	57.0%	1.6%	6.5%	3.9%	13.4%	17.6%	100.0%
		Col %	1.5%	0.5%	0.5%	0.6%	1.2%	1.2%	1.2%
	Female	Count	1,569	65	193	95	336	548	2,806
		Row %	55.9%	2.3%	6.9%	3.4%	12.0%	19.5%	100.0%
		Col %	1.2%	0.6%	0.4%	0.4%	0.8%	1.1%	0.9%
	N.A.	Count	2				1		3
		Row %	66.7%	0	0	0	33.3%	0	100.0%
		Col %	0	0	0	0	0	0	0
	Total	**Count**	**3,524**	**121**	**414**	**229**	**795**	**1,150**	**6,233**
		Row %	56.5%	1.9%	6.6%	3.7%	12.8%	18.5%	100.0%
		Col %	2.7%	1.1%	0.9%	1.1%	2.0%	2.3%	2.1%
N.A.	Male	Count	822	53	194	92	207	183	1,551
		Row %	53.0%	3.4%	12.5%	5.9%	13.3%	11.8%	100.0%
		Col %	0.6%	0.5%	0.4%	0.4%	0.5%	0.4%	0.5%
	Female	Count	494	20	178	81	139	128	1,040
		Row %	47.5%	1.9%	17.1%	7.8%	13.4%	12.3%	100.0%
		Col %	0.4%	0.2%	0.4%	0.4%	0.4%	0.3%	0.4%
	N.A.	Count	13,443	1,173	4,121	1,809	13,585	26,884	61,015
		Row %	22.0%	1.9%	6.8%	3.0%	22.3%	44.1%	100.0%
		Col %	10.4%	10.4%	9.4%	8.5%	34.3%	53.4%	20.6%
	Total	**Count**	**14,759**	**1,246**	**4,493**	**1,982**	**13,931**	**27,195**	**63,606**
		Row %	23.2%	2.0%	7.1%	3.1%	21.9%	42.8%	100.0%
		Col %	11.4%	11.0%	10.3%	9.3%	35.2%	54.0%	21.5%
Total		**Count**	**129,115**	**11,291**	**43,829**	**21,374**	**39,629**	**50,372**	**295,610**
		Row %	**43.7%**	**3.8%**	**14.8%**	**7.2%**	**13.4%**	**17.0%**	**100.0%**
		Col %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

N.A. - Not Available.

Appendix H

Analysis of Wyoming State Government Attrition for Selected Occupations

Submitted to
Legislative Services Office, Program Evaluation Section
pursuant to MOU with
Department of Employment, Research & Planning Section

Prepared by
Research & Planning Staff[1]

10 March 2000

Introduction

There is a continuous flow of population and labor into and out of Wyoming. As required by state statute, the vast majority of both the stock and flow of labor are reported to the Wyoming Department of Employment (DOE) by employers on their quarterly Unemployment Insurance (UI) tax forms. This analysis uses those quarterly reports and other administrative databases[2] to describe the earnings and work experiences of employees found in a selection of four State of Wyoming occupations. Our study examines the labor market experiences of case workers for the Department of Family Services (DFS), corrections officers with the Department of Corrections (DOC), highway patrol officers with the Department of Transportation (DOT), and technology staff (IT). Data regarding dates of employment for these occupations were provided to DOE, Research & Planning, merged with UI Wage Records (WR) earnings and demographic data bases to produce the following analysis.

Findings

- All four occupational classifications demonstrated above normal attrition rates with out-migration from the state as the most likely explanation.
- The highest attrition rate – for former IT employees – suggests a much higher rate of out-migration.
- For 38 former DFS employees, average wages two quarters after their exit represented a 20.1 percent decrease. These case workers' wages may or may not have been the primary impetus for leaving their jobs.
- The analysis of highway patrol officers and technology staff show that on average those who exited their jobs and stayed in Wyoming to work in the private sector increased their wages.
- Corrections officers have an increased likelihood of holding a secondary job. Highway patrol officers demonstrated the highest level of multiple-job holding.
- For all four occupational groups, multiple-job holding rates within the normal range of labor attachment for the state as a whole.

- Multiple-job holding by state employees is an indicator associated with the greater likelihood that these employees may exit state employment.

Employee Strategies and Labor Market Flow

For any given stock of employed workers at any given point in time, it is normal for that stock of workers to diminish, or experience attrition, over time. Attrition occurs due to worker death, injury, retirement, withdrawal to meet the needs of young or sick family members, new job opportunities in another state, and for other reasons. During the period of study, 1995-1998, all four occupational classifications demonstrated above normal attrition rates with out-migration from the state as the most likely explanation.

In the first quarter after exit from their state jobs only 50 percent of DFS staff were found working in Wyoming. This contrasts markedly with the normal attrition rate. The rate at which all workers in the 25-34 year age group (the interval containing the mean age of former employees for DOC, DOT, and many IT occupations) exit the Wyoming wage records (WR) file is 9.9 percent with 90.1 percent still working after one quarter. Therefore, the norm indicates that on average, among all occupations, only about 10 percent of employees of this age group fail to appear on WR in the following quarters (see Figure). Our interpretation is that the difference between 90.1 percent and 50 percent retention rate for DFS employees probably represents out-migration. The highest attrition rate difference among our selection of occupations – between 90.1 percent on the WR file and 33.7 percent for former IT employees – suggests a much higher rate of out-migration. Wage differentials for IT occupations between Wyoming and other states are substantial. For example, the wage for public and private IT systems analysts [Occupational Employment Statistics (OES) code 25102] was $19.53 per hour in Wyoming in 1998. For computer programmers (OES 25105), the 1998 wage was $16.67. In Utah, the hourly wages for systems analysts and computer programmers were $22.80 and $21.90 respectively, and in Colorado they were even higher (systems analysts, $28.71/hour; computer programmers, $25.26/hour). See Figure 2 for a broad-based index of wage differentials for all IT occupations

Labor Market Outcomes for Those Exiting State Employment and Remaining in Wyoming

Tables 1a-1d show time lines of employment and wages for employees who exited each of the selected occupations in our analysis. Table 1a shows that all 76 DFS case workers were found in WR as being employed by the State in the quarter prior to their exit from DFS employment, and they earned on average $6,112 in that quarter. Following their exit, 38 (50%) were distributed throughout Wyoming's labor market among several industries, both public and private. The average private sector earnings for both the first and second quarters, following the exit quarter, represented decreases in wages to $3,947 and $4,263 respectively. These new earnings levels also represent significantly less than the $5,323 paid to the average wage earner with the private sector (fourth column of data).
The use of Wage Records permits us to calculate average wages per job by quarter to compare state wages to private sector earnings.[3] For those 38 former DFS employees who were found in WR, average wages two quarters after their exit as case workers represented a 20.1 percent decrease. For these case workers, wages may or may not have been the primary impetus for leaving their jobs.[4]

Table 1b provides a useful snapshot of the labor flow dynamic within the Department of Corrections. Twenty (20 or 9.8%) of the 204 corrections officers who exited from 1995 to 1998 were not found working anywhere in Wyoming the quarter prior to their exit quarter of employment from DOC. Also, these 20 worked for the DOC as corrections officers for less than three months. Like DFS case workers, only about half (54%, see Figure 1) reappeared in WR the quarter following exit from DOC. Those who found jobs in the private sector (earning on average $3,629 two quarters following their exit) or in government (earning $4,545 two quarters after) earned on average less than the $5,307 they earned as corrections officers. On average, their wages decreased substantially (-26.1%), indicating that circumstances and motivations other than salary probably led to the decision to leave their jobs.

By contrast, the analysis of highway patrol officers (see Table 1c) and technology staff (see Table 1d) show that on average those who exited their jobs and stayed in Wyoming to work in the private sector increased their wages each of the two quarters following their exit. For five (5) former highway patrol officers, private sector wages increased to an average of $8,026 per quarter. This wage level is about $2,700 above the average quarterly wage per job for all private sector workers in 1998 Quarter 4 ($5,323). It also represents an increase from the $7,397 earned quarterly as a state employee. Of the 12 who took another government job, quarterly wages decreased slightly to an average of $6,798. We cannot explain, from the limited data available to us, why highway patrol officers might leave state employment and subsequently return to it (perhaps, a state agency other than DOT), and assume new jobs with different duties for less earnings.

Among IT staff, 17 of 92 moved to private sector employment in Wyoming, on average earning quarterly wages of $7,887, above the $7,117 they earned the quarter prior to their exit. Those 14 who moved to other positions within Wyoming government earned slightly less than their former quarterly wages ($6,850). The 28 who were found in WR two quarters following their exit earned on average 3.5 percent more than they did when employed as IT technology staff in state government.

Employment Strategies of Those Who Exit During 1995-98: Multiple-Job Holding and Secondary Employers

In past editions of *Wyoming Labor Force Trends*, Research & Planning has published and applied a classification system to labor market research characterizing varying degrees of labor force attachment exhibited in wage records.[5] Multiple-job holders, one category within this classification system, are defined as those employees found in wage records who worked for three or more employers in the same quarter or who worked for the same two employers for each of two consecutive quarters or more. Other categories use incidences of secondary employment on an itinerant or occasional basis which are often associated with employees' flow in and out of the labor market – or market churning (e.g., the 20 DOC staff not employed before working in DOC and remaining with DOC for less than 3 months — Table 1b). Tables 5a-5d show, for each occupation in our analysis, the incidences of state employees meeting the definition of multiple-job holder, during the year of exit, and provide the industrial sector where they held the multiple job. Our premise for studying this data is to determine whether or not there is a relationship between multiple-job holding and state government attrition for a given occupation.

The multiple-job holding rate for all state and local government workers in 1998 was 14.9 percent.[6] For DFS and IT staff (Tables 5a and 5d), the data show normal multiple-job holding patterns of 14.5 percent and 14.1 percent respectively. Table 5b shows that corrections officers have an increased likelihood of holding a secondary job (19.6%). Highway patrol officers demonstrated the highest level of multiple-job holding (Table 5c), with 21.6 percent opting to work a second job. Multiple-job holding can be viewed as a strategy employed by state workers to augment their primary earnings. Of course, multiple-job holding may complicate one's domestic life.

Based on our published data, holding a secondary job (e.g., working in the private sector in the first quarter and then working the third and fourth quarters as a state employee) is normal for 22.6 percent of all state and local government workers. However, whether for reasons associated with exit (a form of market churning) or other reasons, three of the occupational exit groups displayed a higher than normal rate of holding secondary jobs (though not a multiple-job holder). DFS case workers held secondary jobs at a rate of 35.5 percent (see Table 5a). DOC corrections officers held secondary jobs at a rate of 35.3 percent (see Table 5b). DOT highway patrol officers who exited employment held secondary jobs at a rate only slightly higher than the norm, 24.3 percent (see Table 5c). Tables 6a-6d are crosstabulations of multiple-job holding, but only for those employees in our analysis who exited state employment in 1998. Due to the small numbers of employees who exited in this single year, the data were not generally useful in validating the continuing patterns in multiple-job holding.[7]

Although the data in Tables 6a, 6c and 6d are inconclusive, it appears that for corrections officers (Table 6b) multiple-job holding is not a constant but rather changes over time. Multiple-job holding increases to 26.3 percent in the year of exit in 1998 compared to 19.6 percent for the period 1995-98 (Table 5b). Without data by occupation for all of state government over time, we cannot determine the extent to which multiple-job holding represents occupation specific behavior. Without longitudinal data, we cannot determine how extensively multiple-job holding may be considered a function of change in general economic conditions. For example, in 1990, Wyoming ranked 37th among the 50 states in competitive wages.[8] By 1996, our competitive wage ranking fell to 45. In 1998, Wyoming still ranked 45th in the nation. Only by placing occupational wages within the broader economic context can we begin to understand the labor market strategies of employees.

As an example of how the national market for technology staff affect employment attrition rates at IT, Figure 2 shows the distribution of average annual wages of technology staff, both public and private sector for all states. The data were based on weighted averages of Occupational Employment Statistics (OES) survey data for 1996, fourth quarter.[9] The mean annual wage was $40,793, with a standard deviation of $5,707. The average annual wage for technology staff employed by the state of Wyoming was $28,468. The average annual wage for all technology staff working in both the public and private sectors in Wyoming was $31,366.

Tables 7a-7d are very useful in showing the contrast in patterns of multiple-job holding and holding secondary jobs between those who were actively employed in the respective agencies during 1998. For all four occupational groups, multiple-job holding and the holding of secondary jobs by state employees are within the normal range of labor attachment for the state as a whole. The comparison of these data with Tables 5a-5d indicate that multiple-job holding and the holding of secondary jobs on an itinerant basis by state employees are indicators associated with the greater likelihood that these employees may exit state employment, whether it be for financial reasons or driven by other circumstances.

Demographic Comparisons by Occupation of Those Who Exited State Government 1995-1998 with the Active Occupational Workforce 1998

Tables 3a-3d illustrate the distribution by age and gender of those exiting the respective occupations in this analysis. Characterizing those actively holding similar positions with the various agencies, demographic data in Tables 4a-4d permit us to identify the differences between those who work at a given occupation in state government and those who exit their job.

For case workers at DFS (Tables 3a and 4a), exiting employees are generally 4.2 years younger than our snapshot of the active 1998 DFS workforce; they have a mean age of 35.4 years compared to 39.6 years. In Table 4a, we can see that at least 73.8 percent of case workers were women (for some employees we did not have demographic data). Comparing the gender data of the two tables, we can see that male case workers represent 27.6 percent of those exiting DFS, but only 20.7 percent of the active workforce. This finding underscores the general observation confirmed by much of our published information that young males constitute a highly mobile segment of the labor market. Also, because 51.3 percent of employee exits are under the age of 35, family considerations (e.g., births, day care availability, education, employment of a spouse or other family member) probably weigh heavily in the decision to leave state employment.

An analysis of exits among correctional officers at DOC show a gap of 5.5 years between the mean age of those employed in 1998 (Table 4b; 37.6 years) and those who exited employment (Table 3b; 32.1 years). In contrast to DFS data, DOC data shows that in 1998, 75.3 percent of correctional officers were men. The proportion of males and females exiting DOC employment largely reflected the gender distribution within the occupation. Similarly to DFS, more than half of DOC exits fell among two age groups, those under 25 (16.7%) and those 25-34 (39.7%).

DOT highway patrol officers (see Tables 3c and 4c) who exit have a mean age of 29.7 years, compared to the 1998 DOT occupational mean age of 40.9 years for those in the active work force. Highway patrol officers are primarily male (89.2% in 1998; Table 4d). From the data, we cannot confirm whether male officers are more likely to leave employment than female officers. Interestingly, highway patrol officers who exited employment during 1995-98 were very evenly distributed among three age categories, under 35 (11 employees), 35-44 (10 employees) and 45-up (8 employees). The difference in mean age between exiting officers and those actively employed in 1998 (40.9 - 29.7 = 11.2 years) shows that young male officers are probably more likely to exit than older officers who are likely to have more years invested with the State.

Analysis of Table 4d shows that IT technology staff in 1998 had an employment ratio of 61 percent male to 29.9 percent female (no demographic data were available for 9.1%). Between 1995-98, female technology staff exited IT at a rate of 40.2 percent compared to the male exit rate of 48.9 percent. Thus, as a percentage of the IT workforce, younger women are probably more likely to leave state employment. The difference in mean age (8.5 years) between those exiting IT during 1995-98 (34.8 years) and those actively employed in 1998 (43.4 years) probably reflects the national market for technology staff and the likelihood that younger people are more likely to respond to it than older workers who, generally, have more family and community attachments.

Conclusions

Since the state is the primary purchaser (a near monopsony exists within Wyoming) of the services of some of these occupations, such as IT services, the choice is to either pick up the cost at the point of purchase with a highly visible market signal *or* pick up the cost in the less visible system of recruitment and training and the inefficiency in service to public and private customers associated with turnover – the price is the same, the question is how it is valued and how and who bears it.

Despite the limitations of the administrative records approach to the analysis of market outcomes for state employees who exit employment with the state, it is clear that the approach has promise, especially given the pending confidentiality agreements between states that will permit market based tracing of former workers for statistical purposes.

Limitations

While it is possible to place occupational exit analysis in the context of such broader issues as the "brain drain"[10] and historic trends in the level of turnover by industrial sector,[11] the time constraints imposed upon the study did not permit more comprehensive analysis.

In addition, since the state lacks comprehensive analysis of exit behavior in general, it is difficult to determine how extensively the behavior of the four occupations is unique within state government, to what extent other occupations are beginning to exhibit comparable patterns of exit, or to what extent pay or other policies are effective in enhancing employee retention and cost control. Absent a comprehensive, ongoing program of *market based* occupational analysis, the value of narrow, episodic and retrospective analysis is questionable.

All of the occupations in this study require some post-high school training. We cannot account for the migration decisions of families when the spouse may be unable to use his or her post-high school education or training in finding suitable work.

Contextual variables for the family (e.g., the availability and cost of day care) are not available to us, nor are non-monetary costs and benefits of the particular type of work part of this study's components. Given that case workers average annual wages during the study period are 173 percent above the

poverty level for a family of three ($24,448 compared to $14,150), for example, it may be logical for a DFS case worker to care for children at home rather than work and pay for day care.[12]

Finally, additional limitations of the administrative data approach to analysis are discussed at length in the publication cited in end note 2.

End Notes

[1] Tom Gallagher, Manager; Craig Henderson, One Stop Program Supervisor; Tony Glover, Senior Analyst; Norman Baron, Economist.

[2] Wyoming Department of Employment. Research & Planning. *Wyoming Wage Records 1992-1998: a Baseline Study*, November 1999, pp. 2-8. This publication contains a comprehensive bibliography of all publications and articles published by the agency that relied on wage records research, principally articles published in *Wyoming Labor Force Trends*.

[3] Wyoming Department of Employment. Research & Planning. *Wyoming Wage Survey 1998.* (10 March 2000).

[4] At this time, Research & Planning does not have interstate agreements in place with other states to track workers earnings and employment or commuting patterns across state lines using wage records. Future analysis of this type will permit a more complete interpretation of employees' labor market strategies.

[5] Wyoming Department of Employment. Research & Planning. *Wyoming Wage Records 1992-1998: a Baseline Study*, November 1999.

[6] Ibid., p. 64.

[7] These tables were run as part of our contractual agreement with the Wyoming Legislative Service Office.

[8] Carol Kjar, "Competitive Wage Ranking: Retaining Wyoming's Workforce," *Wyoming Labor Force Trends*, March 2000, pp. 16-17.

[9] The weighted average was based on the following OES occupational codes: 25102, 25103, 25104, 25105,25108, 25111, 25199.

[10] Steven Butler, *Tracking University of Wyoming Graduates into the Wyoming Work-force: a report prepared for the Research & Planning Section of the Employment Resources Division, State of Wyoming* (September 17 1995) . See also Wyoming Department of Employment. Research & Planning. *Under the Lamppost: a Report to the Wyoming Workforce Development Council*, November 1998.

[11] Mike Evans, "Job Turnover and Hire Rates in Wyoming: Which is Greater: Job Creation or Job Destruction?," *Wyoming Labor Force Trends*, June 1999.

[12] Tony Glover, "The Flow of Labor in Wyoming: Department of Family Services, Division of Vocational Rehabilitation and Job Training Partnership Act Clients," *Wyoming Labor Force Trends*, p. 7.

Technical Appendix

On February 29, 2000, We received four files from Legislative Service Office (LSO) that contained Social Security numbers (SSN) of individuals that had terminated their employment from certain occupations within state government. These four files contained the following information:

- SSN
- Title
- Work Location
- Effective Date of Termination

An examination of the data contained in these files revealed the following:

- Termination dates outside the date range specified in the MOU with LSO
- SSNs appearing more than once in the file

LSO was contacted and informed about the inconsistencies in the data. An agreement was reached on how to deal with the duplicate SSNs and other inconsistencies that were found by R&P and LSO. The final files contained the following number of Records:

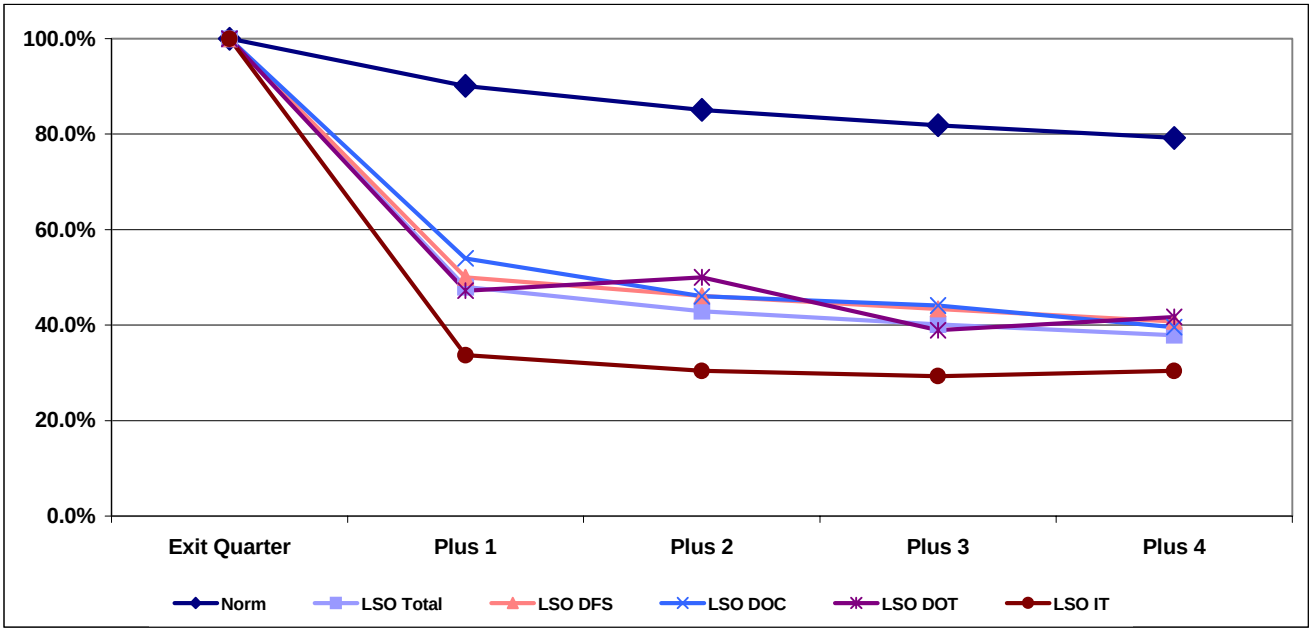
- Department of Family Services 76
- Department of Corrections 204
- Department of Transportation 37
- Information Technology 92

These files were then matched by SSN to both Quarterly and Yearly Unemployment Insurance (UI) Wage Record files based on the individuals termination date. Information on industry and county of employment was linked to these files from the Quarterly Unemployment Insurance (QUI) files. QUI files contain information about employers were as Wage Record files contain information on the individual. Demographic information was obtained by matching these files to R&P's master demographic file on SSN. The master demographic file is a combination of demographic information from several files including the following:

- Drivers License
- Employment Service files
- UI Claims records

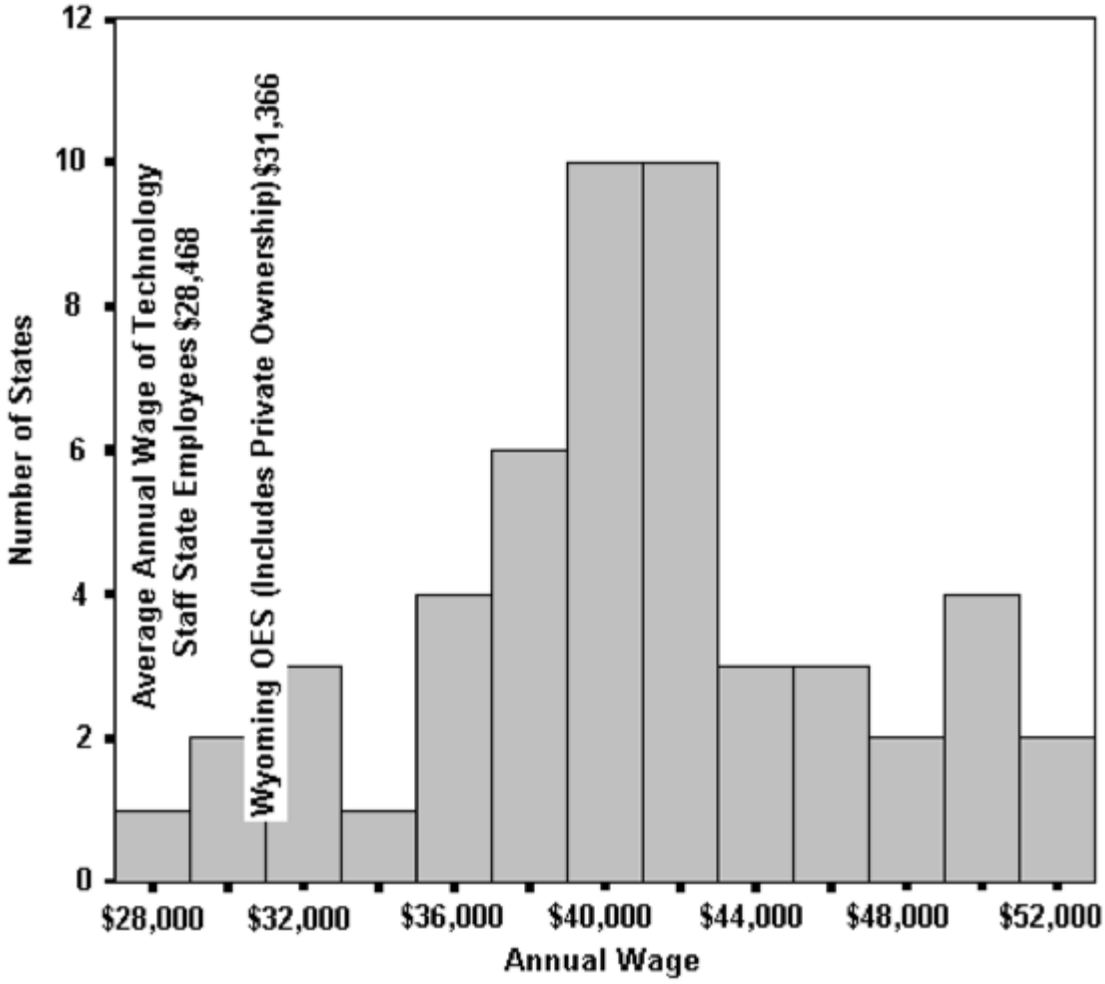
	Exit Quarter	Plus 1	Plus 2	Plus 3	Plus 4
WR Based on 1997 Age Group 25-34	100.0%	90.1%	85.1%	81.9%	79.2%
LSO Total	100.0%	48.0%	42.9%	40.1%	37.9%
DFS	100.0%	50.0%	46.1%	43.4%	40.8%
DOC	100.0%	54.0%	46.0%	44.1%	39.6%
DOT	100.0%	47.2%	50.0%	38.9%	41.7%
IT	100.0%	33.7%	30.4%	29.3%	30.4%

Figure 1: Percent of Exits Still Working in Wyoming after Leaving State Government by Occupation and the Percent of All Persons in the Same Age Group Still Working After Their Exit Date (Line with Diamond Markers) as Found in Wage Records, 1995-98



Line with Diamond Markers = norm. Norm - actual = probable out migration by occupation (i.e., 90.1 percent of 25-34 year-olds working in the first quarter following the exit quarter minus 54.0 percent of Department of Correction (DOC) exits found in Wyoming Wage Records = a probable out-migration rate 36.1 percent higher than that expected for the age group).

Figure 2: Average Annual Wage Differentials for Information Technology (IT) Staff Among 50 States, 1996 Fourth Quarter



Notes

Wyoming State Employee Annual Wages - Wages of the last full quarter of employment times 4.

Other Annual Wages - Based on mean hourly rate times 2080 hours.

Graph based on 96Q4 OES Wage Survey of all 50 states.

Table 1a: Industry of Employment and Wages for Individuals Employed as Case Workers (DFS) Jan 1995 - Dec 1998

	Number Found 1Qtr Prior	Average Wage 1 Qtr Prior	Number Found 1 Qtr After	Average Wage 1 Qtr After	Number Found 2 Qtr After	Average Wage Qtr After
Private Sector			18	$3,947	21	$4,2
Goods-Producing			ND	$3,379	ND	$2,5
Agriculture			ND	$1,806	ND	$6
Mining						
Construction			ND	$3,379	ND	$4,7
Manufacturing					ND	$2,1
Service-Producing			15	$4,060	18	$4,5
TCPU**			ND	$7,782	ND	$7,8
Wholesale			ND	$3,656	ND	$3,3
Retail			ND	$1,161	ND	$2,0
FIRE***						
Services			9	$4,245	12	$4,7
Government			20	$5,024	14	$5,8
State	76	$6,112	7	$4,048	ND	$11,1
Local			13	$5,550	ND	$5,4
Total Found WR	76	$6,112	38	$4,514	35	$4,8
Percent Change in Wages Relative to Average Wage 1 Quarter Prior				-26.2%		-20.1
Not Found WR	0		38		41	
Grand Total	76		76		76	

DOE ERD R&P
March 2000

ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.
**TCPU = Transportation, Communications and Public Utilities
***FIRE = Finance, Insurance and Real Estate

Table 1b: Industry of Employment and Wages for Individuals Employed as Corrections Officers (DOC) Jan 1995 - Dec 1998

	Number Found 1Qtr Prior	Average Wage 1 Qtr Prior	Number Found 1 Qtr After	Average Wage 1 Qtr After	Number Found 2 Qtr After	Average Wag Qtr After
Private Sector			63	$3,596	63	$3,
Goods-Producing			21	$4,321	22	$4,
Agriculture			ND	$3,108		
Mining			6	$5,645	6	$6,
Construction			8	$2,796	11	$3,
Manufacturing			ND	$5,231	5	$6,
Service-Producing			42	$3,234	41	$2,
TCPU**			7	$5,545	ND	$4,
Wholesale			ND	$7,854	ND	$7,
Retail			12	$2,056	18	$2,
FIRE***			ND	$977		
Services			19	$2,516	15	$2,
Government			45	$3,284	30	$4,
State	184	$5,307	17	$1,734	4	$3,
Local			28	$4,226	26	$4,
Total Found WR	184	$5,307	109	$3,448	93	$3,
Percent Change in Wages Relative to Average Wage 1 Quarter Prior				-35.0%		-26
Not Found WR	20		95		111	
Grand Total	204		204		204	

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Table 1c: Industry of Employment and Wages for Individuals Employed as Highway Patrol Officers (DOT) Jan 1995 - Dec 1998

	Number Found 1Qtr Prior	Average Wage 1 Qtr Prior	Number Found 1 Qtr After	Average Wage 1 Qtr After	Number Found 2 Qtr After	Average Wage Qtr After
Private Sector			5	$7,263	5	$8,02
Goods-Producing			ND	$12,795	ND	$13,7
Agriculture						
Mining			ND	$12,795	ND	$13,7
Construction						
Manufacturing						
Service-Producing			4	$5,880	4	$6,58
TCPU**			ND	$11,281	ND	$11,68
Wholesale			ND	$6,462	ND	$6,53
Retail						
FIRE***						
Services			ND	$2,888	ND	$4,06
Government			12	$6,538	13	$6,79
State	35	$7,397	ND	$3,492	ND	$6,19
Local			ND	$7,147	ND	$6,98
Total Found WR	35	$7,397	17	$6,751	18	$7,13
Percent Change in Wages Relative to Average Wage 1 Quarter Prior				-8.7%		-3.5
Not Found WR	2		20		19	
Grand Total	37		37		37	

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March 2000

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***FIRE = Finance, Insurance and Real Estate

Table 1d: Industry of Employment and Wages for Individuals Employed as Technology Staff (IT) Jan 1995 - Dec 1998

	Number Found 1Qtr Prior	Average Wage 1 Qtr Prior	Number Found 1 Qtr After	Average Wage 1 Qtr After	Number Found 2 Qtr After	Average Wage Qtr After
Private Sector			17	$7,301	14	$7,8
Goods-Producing			ND	$3,420	ND	$6,3
Agriculture			ND	$5,756	ND	$7,5
Mining						
Construction						
Manufacturing				$1,084	ND	$5,1
Service-Producing			15	$7,818	12	$8,1
TCPU**			ND	$8,234	ND	$8,0
Wholesale			ND	$8,832	ND	$11,7
Retail						
FIRE***			ND	$9,580	ND	$8,2
Services			11	$7,367	7	$7,6
Government			14	$6,559	14	$6,8
State	92	$7,117	10	$6,780	10	$7,3
Local			4	$6,006	4	$5,6
Total Found WR	92	$7,117	31	$6,966	28	$7,3
Percent Change in Wages Relative to Average Wage 1 Quarter Prior				-2.1%		3.
Not Found WR	0		61		64	
Grand Total	92		92		92	

DOE ERD R&P
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Table 2a: Wyoming County and Region of Employment for Individuals Employed as Case Workers (DFS) Jan 1995 - Dec 19

Region/County	Quarter Prior to Exit (a)	Quarter Following Exit
Central	**12**	**5**
Carbon	4	ND
Converse	4	ND
Natrona	4	ND
Northeast	**14**	**ND**
Campbell	11	ND
Crook		
Johnson	ND	
Sheridan		
Weston	ND	ND
Northwest	**15**	**5**
Big Horn	ND	
Fremont	7	5
Hot Springs		
Park	ND	
Washakie	ND	
Southeast	**10**	**6**
Albany	ND	
Goshen	ND	ND
Laramie	4	4
Niobrara		
Platte	ND	ND
Southwest	**23**	**ND**
Lincoln	4	ND
Sublette	ND	ND
Sweetwater	8	ND
Teton	ND	
Uinta	7	ND
Statewide		**13**
Total Found WR	76	38
Not Found WR	0	38
Grand Total	76	76

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(a) County quarter prior to exit provided by LSO
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 2b: Wyoming County and Region of Employment for Individuals Employed as Corrections Officers (DOC) Jan 1995 -

Region/County	Quarter Prior to Exit (a)	Quarter Following Exit
Central	**168**	**34**
Carbon	168	27
Converse		ND
Natrona		ND
Northeast	**11**	**6**
Campbell		ND
Crook		
Johnson		
Sheridan		ND
Weston	11	ND
Northwest	**7**	**6**
Big Horn		ND
Fremont	ND	ND
Hot Springs		
Park		
Washakie	ND	ND
Southeast	**17**	**15**
Albany		ND
Goshen		ND
Laramie		ND
Niobrara	17	8
Platte		ND
Southwest	**0**	**7**
Lincoln		
Sublette		ND
Sweetwater		ND
Teton		
Uinta		
Statewide		**41**
Total Found WR	184	109
Not Found WR	20	95
Grand Total	204	204

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(a) County quarter prior to exit provided by LSO
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

INDIVIDUALS

Table 2c: Wyoming County and Region of Employment for Individuals Employed as Highway Patrol Officers (DOT) Jan 199

Region/County	Quarter Prior to Exit (a)	Quarter Following Exit
Central	**11**	**ND**
Carbon	ND	
Converse	4	ND
Natrona	ND	ND
Northeast	**ND**	**ND**
Campbell	ND	ND
Crook	ND	
Johnson		
Sheridan	ND	
Weston		
Northwest	**ND**	**ND**
Big Horn		
Fremont	ND	ND
Hot Springs		
Park		
Washakie		
Southeast	**8**	**ND**
Albany	ND	
Goshen	ND	
Laramie	ND	
Niobrara		
Platte	ND	ND
Southwest	**14**	**9**
Lincoln	ND	ND
Sublette		
Sweetwater	8	4
Teton	ND	ND
Uinta	ND	ND
Statewide		**ND**
Total Found WR	35	17
Not Found WR	2	20
Grand Total	37	37

DOE ERD R&P
March 2000

(a) County quarter prior to exit provided by LSO
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 2d: Wyoming County and Region of Employment for Individuals Employed as Technology Staff (IT) Jan 1995 - Dec 19

Region/County	Quarter Prior to Exit (a)	Quarter Following Exit
Central	**11**	**ND**
Carbon		
Converse	ND	ND
Natrona	ND	ND
Northeast		**ND**
Campbell		
Crook		
Johnson		ND
Sheridan		
Weston		
Northwest	**ND**	**ND**
Big Horn	ND	
Fremont		ND
Hot Springs		
Park		
Washakie	ND	ND
Southeast	**73**	**11**
Albany	ND	
Goshen		
Laramie	ND	11
Niobrara		
Platte		
Southwest	**6**	**ND**
Lincoln		
Sublette		
Sweetwater		
Teton		
Uinta	6	ND
Statewide		**13**
Total Found WR	92	31
Not Found WR	0	61
Grand Total	92	92

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(a) County quarter prior to exit provided by LSO
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

INDIVIDUALS

Table 3a: Demographics of Case Workers (DFS) Exiting Employment 1995 to 1998

Age Groups

Unknown	Under 35	35-44	45-Up	Total
2	39	17	18	76
2.6%	51.3%	22.4%	23.7%	

Gender

Unknown	Males	Females	Total
2	21	53	76
2.6%	27.6%	69.7%	

Mean Age
35.4 Years

Table 4a: Demographics of Case Workers (DFS) Employed in 1998

Age Groups

Unknown	22-24	25-34	35-44	45-54	55-Up	Total
9	5	54	45	40	11	164
5.5%	3.0%	32.9%	27.4%	24.4%	6.7%	

Gender

Unknown	Males	Females	Total
9	34	121	164
5.5%	20.7%	73.8%	

Mean Age
39.6 Years

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March 2000

Table 3b: Demographics of Correctional Officers (DOC) Exiting Employment 1995 to 1998

Age Groups

Unknown	Under 25	25-34	35-44	45-54	55-Up	Total
8	34	81	52	23	6	204
3.9%	16.7%	39.7%	25.5%	11.3%	2.9%	

Gender

Unknown	Males	Females	Total
8	161	35	204
3.9%	78.9%	17.2%	

Mean Age
32.1 Years

Table 4b: Demographics of Correctional Officers (DOC) Employed in 1998

Age Groups

Unknown	14-21	22-24	25-34	35-44	45-54	55-Up	Total
11	17	34	105	79	78	28	352
3.1%	4.8%	9.7%	29.8%	22.4%	22.2%	8.0%	

Gender

Unknown	Males	Females	Total
11	265	76	352
3.1%	75.3%	21.6%	

Mean Age
37.6 Years

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March 2000

Table 3c: Demographics of Highway Patrol Officers (DOT) Exiting Employment 1995 to 1998

Age Groups

Unknown	Under 35	35-44	45-Up	Total
8	11	10	8	37
21.6%	29.7%	27.0%	21.6%	

Gender

Unknown	Males	Total
10	27	37
27.0%	73.0%	

Mean Age
29.7 Years

Table 4c: Demographics of Highway Patrol Officers (DOT) Employed in 1998

Age Groups

Unknown	Under 35	35-44	45-54	55-Up	Total
16	41	57	46	6	166
9.6%	24.7%	34.3%	27.7%	3.6%	

Gender

Unknown	Males	Total
18	148	166
10.8%	89.2%	

Mean Age
40.9 Years

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March 2000

Table 3d: Demographics of Technology Staff (IT) Exiting Employment 1995 to 1998

Age Groups

Unknown	Under 35	35-44	45-Up	Total
9	31	32	20	92
9.8%	33.7%	34.8%	21.7%	

Gender

Unknown	Males	Females	Total
10	45	37	92
10.9%	48.9%	40.2%	

Mean Age
34.8 Years

Table 4d: Demographics of Technology Staff (IT) Employed in 1998

Age Groups

Unknown	Under 35	35-44	45-54	55-Up	Total
22	44	75	75	25	241
5.5%	32.9%	27.4%	24.4%	6.7%	

Gender

Unknown	Males	Females	Total
22	147	72	241
9.1%	61.0%	29.9%	

Mean Age
43.4 Years

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March 2000

Table 5a: Individuals Employed as Case Workers (DFS) Who were Multiple Job Holders[1] in Year of Exit (1995-1998) by Secondary J

Department of Family Services 1995-1998			
		Count	
Private Sector	Goods producing	ND	
	Service Producing	ND	
	Private Sector Total	6	
Government Sector	Local Government	ND	
	State Government	ND	
	Government Sector Total	5	
Total Multiple Job Holders		11	14.5% [2]
No Secondary Employer		38	50.0% [3]
Not Multiple Job Holders	More Than One Job	27	35.5%
Total		76	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 5b: Individuals Employed as Corrections Officers (DOC) Who were Multiple Job Holders[1] in Year of Exit (1995-1998) by Seco

Department of Corrections 1995-1998			
		Count	
Private Sector	Goods producing	8	
	Service Producing	20	
	Private Sector Total	28	
Government Sector	Local Government	4	
	State Government	8	
	Government Sector Total	12	
Total Multiple Job Holders		40	19.6% [2]
No Secondary Employer		92	45.1% [3]
Not Multiple Job Holders	More Than One Job	72	35.3%
Total		204	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 5c: Individuals Employed as Highway Patrol Officers (DOT) Who were Multiple Job Holders[1] in Year of Exit (1995-199

Department of Transportation 1995-1998			
		Count	
Private Sector	Goods producing		
	Service Producing	ND	
	Private Sector Total	ND	
Government Sector	Local Government	ND	
	State Government	ND	
	Government Sector Total	ND	
Total Multiple Job Holders		8	21.6%[2]
No Secondary Employer		20	54.1%[3]
Not Multiple Job Holders	More Than One Job	9	24.3%
Total		37	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 5d: Individuals Employed as Technology Staff (IT) Who were Multiple Job Holders[1] in Year of Exit (1995-1998) by Sec

Information Technology 1995-1998			
		Count	
Private Sector	Goods producing	ND	
	Service Producing	ND	
	Private Sector Total	6	
Government Sector	Local Government	ND	
	State Government	ND	
	Government Sector Total	7	
Total Multiple Job Holders		13	14.1%[2]
No Secondary Employer		60	65.2%[3]
Not Multiple Job Holders	More Than One Job	19	20.7%
Total		92	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 6a: Individuals Employed as Case Workers (DFS) Who were Multiple Job Holders[1] in Year of Exit (1998) by Secondary

Department of Family Services 1998		
		Count
Private Sector	Goods producing	
	Service Producing	ND
	Private Sector Total	ND
Government Sector	Local Government	
	State Government	
	Government Sector Total	
Total Multiple Job Holders		ND
No Secondary Employer		15
Not Multiple Job Holders	More Than One Job	9
Total		ND

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March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 6b: Individuals Employed as Corrections Officers (DOC) Who were Multiple Job Holders[1] in Year of Exit (1998) by Sec

Department of Corrections 1998			
		Count	
Private Sector	Goods producing	ND	
	Service Producing	ND	
	Private Sector Total	9	
Government Sector	Local Government	ND	
	State Government	ND	
	Government Sector Total	6	
Total Multiple Job Holders		15	26.3% [2]
No Secondary Employer		29	50.9% [3]
Not Multiple Job Holders	More Than One Job	13	22.8%
Total		57	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 6c: Individuals Employed as Highway Patrol Officers (DOT) Who were Multiple Job Holders[1] in Year of Exit (1998) by S

Department of Transportation 1998		
		Count
Private Sector	Goods producing	
	Service Producing	
	Private Sector Total	
Government Sector	Local Government	ND
	State Government	ND
	Government Sector Total	ND
Total Multiple Job Holders		ND
No Secondary Employer		6
Not Multiple Job Holders	More Than One Job	ND
Total		10

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March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 6d: Individuals Employed as Technology Staff (IT) Who were Multiple Job Holders[1] in Year of Exit (1998) by Secondar

Information Technology 1998		
		Count
Private Sector	Goods producing	
	Service Producing	
	Private Total	
Government Sector	Local Government	
	State Government	ND
	Government Sector Total	ND
Total Multiple Job Holders		ND
No Secondary Employer		14
Not Multiple Job Holders	More Than One Job	ND
Total		19

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March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 7a: Individuals Employed as Case Workers (DFS) during 1998 Who were Multiple Job Holders[1] by Industrial Sect
Counts are by Secondary Job

Department of Family Services			
		Count	
Private Sector	Goods producing		
	Service Producing	12	
	Private Sector Total	12	
Government Sector	Local Government	ND	
	State Government	ND	
	Government Sector Total	6	
Total Multiple Job Holders		18	11.0% [2]
No Secondary Employer		122	74.4% [3]
Not Multiple Job Holders	More Than One Job	24	14.6%
Total		164	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 7b: Individuals Employed as Corrections Officers (DOC) during 1998 Who were Multiple Job Holders[1] by Indus
Counts are by Secondary Job

Department of Corrections			
		Count	
Private Sector	Goods producing	5	
	Service Producing	34	
	Private Sector Total	39	
Government Sector	Local Government	6	
	State Government	10	
	Government Sector Total	16	
Total Multiple Job Holders		55	15.6% [2]
No Secondary Employer		254	72.2% [3]
Not Multiple Job Holders	More Than One Job	43	12.2%
Total		352	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 7c: Individuals Employed as Highway Patrol Officers (DOT) during 1998 Who were Multiple Job Holders[1] by Indu
Counts are by Secondary Job

Department of Transportation			
		Count	
Private Sector	Goods producing	9	
	Service Producing	8	
	Private Sector Total	17	
Government Sector	Local Government	ND	
	State Government	ND	
	Government Sector Total	ND	
Total Multiple Job Holders		20	12.0% [2]
No Secondary Employer		134	80.7% [3]
Not Multiple Job Holders	More Than One Job	12	7.2%
Total		166	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Table 7d: Individuals Employed as Technology Staff (IT) during 1998 Who were Multiple Job Holders[1] by Industria
Counts are by Secondary Job

Information Technology			
		Count	
Private Sector	Goods producing	ND	
	Service Producing	ND	
	Private Sector Total	12	
Government Sector	Local Government	ND	
	State Government	ND	
	Government Sector Total	13	
Total Multiple Job Holders		25	10.4% [2]
No Secondary Employer		194	80.5% [3]
Not Multiple Job Holders	More Than One Job	22	9.1%
Total		241	100.0%

DOE ERD R&P
March 2000

1 See Appendix C of *Wyoming Wage Records 1992-1998: A Baseline Study* for a definition of a Multiple Job Holder.
2 The Multiple Job Holding rate for government in 1998 was 14.9%.
(See page 64 of *Wyoming Wage Records 1992-1998: A Baseline Study*)
3 22.6% of those working in government worked more than one job during 1998.
(See page 70 of *Wyoming Wage Records 1992-1998: A Baseline Study* where 100%-77.4% =22.6%)
ND = (Nondisclosure) indicates withheld data not meeting the agency's confidentiality criteria.

Glossary

Administrative Database: Database used to aid in the storing and retrieving of information (data) used in the administration of a program. A few examples are listed below.

Drivers License: It contains information on individuals collected at the time they apply for a drivers license.

ES-202: It contains information on employers subject to Unemployment Insurance (UI) law.

QUI or EQUI: Other names for ES-202.

UI Claims: It contains information collected from an individual when they file a UI claim.

Wage Records: It contains limited information on individuals working for employers subject to UI law.

Attachment to the Labor Market: A classification system developed and used by Research & Planning (R&P) to categorize an individual's attachment to an Unemployment Insurance (UI) covered employer and the Wyoming UI covered labor market. It contains the following six categories:

Steady Worker Same Employer (SWSE): An individual who works for three or more quarters of the reference year and had only one employer in that year.

Steady Worker Different Employer (SWDE): An individual who works for three or more quarters of the reference year but does not fit into one of the other attachment categories.

Multiple Job Holder (MJH): An individual who is determined to be working more than one UI covered job at any given time during the reference year.

Job Changer (JC): An individual who is determined to have changed UI covered jobs during the reference year and was not a Multiple Job Holder.

Two Quarter Worker (TQW): An individual who worked only two quarters of the reference year and did not fit into one of the other attachment categories.

One Quarter Worker (OQW): An individual who worked only one quarter of the reference year and did not fit into one of the other attachment categories.

Current Employment Statistics (CES) / Nonagricultural Wage and Salary Employment: The CES program produces estimates of jobs worked and hours and earnings in selected industries from a sample survey of establishments operating in Wyoming.

Current Population Survey (CPS): The CPS is the monthly survey of households used to estimate the number of persons employed or unemployed, and to calculate the unemployment rate.

Database: A container used to organize either single or multiple data tables and/or various other files used to display, link, input, or query information to or from these tables.

Destination States: States to which the Wyoming population is most likely to migrate.

ES-202: This database is derived from Unemployment Insurance (UI) tax summary reports submitted to the Wyoming Department of Employment each quarter by employers that are subject to state and federal UI laws. It is sometimes called Quarterly Unemployment Insurance (**QUI or Enhanced QUI (EQUI)**). It contains information regarding monthly employment, quarterly wages, and other previously collected information about the business establishment submitting the report.

Exits: Number of individuals that left employers.

Hires: Number of individuals hired by employers.

Job Changer (JC): An individual that is determined to have changed Unemployment Insurance (UI) covered jobs during the reference year and was not a **Multiple Job Holder (MJH)**.

Labor Market Information (LMI): The Labor Market Information system has been established to provide information/data about jobs, workers, and employment to a wide range of users. LMI is a resource describing employment, unemployment, and factors affecting labor supply and demand. It helps individuals and groups know and understand what jobs are available, the skills required, and which industries are growing or declining. LMI is supported by the Bureau of Labor Statistics (BLS), Employment and Training Administration (ETA), and National & State Occupational Information Coordinating Committees (NOICC & SOICC). The methods used to collect, produce, and calculate LMI data throughout the states must be consistent. We would not be able to compare economic conditions from state to state if everyone used a different system of calculating rates.

Mean: Arithmetic Average. A mean of a set of values is the sum of those values divided by the number of values.

Median: A value in an ordered set of values below and above which there is an equal number of values or which is the mean of the two middle values if there is no one middle number.

Multiple Job Holder (MJH): An individual that is determined to be working more than one Unemployment Insurance (UI) covered job at any given time during the reference year.

Occupational Employment Statistics (OES): The OES program produces estimates of occupational wages and employment from a survey of establishments operating in Wyoming.

One Quarter Worker (OQW): An individual that worked only one quarter of the reference year and did not fit into one of the other attachment categories.

Primary Employer: The employer who paid the individual the most wages in a particular quarter or year.

Primary Industry: The industry of the primary employer.

Projections: An estimate of future possibilities based on current trends and/or variables relevant to the market. In this publication, it is the estimate of future employment in an industry or occupation based on historical employment trends.

Standard Industrial Classification (SIC): A system "developed for use in the classification of *business* establishments by type of activity in which they are engaged; for purposes of facilitating the collection, tabulation, presentation, and analysis of data relating to establishments, and for promoting uniformity and comparability in the presentation of statistical data collected by various agencies of the United States Government, state agencies, trade associations, and private research organizations." (Executive Office of the President, Office of Management and Budget, ***Standard Industrial Classification Manual***, 1987, p. 11.)

Steady Worker Different Employer (SWDE): An individual that works for three or more quarters of the reference year but not fitting into one of the other attachment categories.

Steady Worker Same Employer (SWSE): An individual that works for three or more quarters of the reference year and had only one employer in that year.

Turnover Rate: Exits divided by the total number of jobs.

Two Quarter Worker (TQW): An individual that worked only two quarter of the reference year and did not fit into one of the other attachment categories.

Unemployment Insurance (UI): A government-operated temporary financial support program for individuals who lose their jobs and are looking for new employment.

Unit of Analysis: The basic operational definition for the collection and organization of information.

Utilization Index: When computed by Industry, it is the total number of quarters worked by individuals whose primary employer is in that industry, divided by the total number of individuals whose primary employer is in that industry multiplied by four [Total Quarters Worked / (Total Number of Individuals * 4)]. When computed for the individual, it is the number of quarters the individual worked divided by four (Quarters Individual Worked / 4).

Wage Records (ES-202's Companion Database): This database is also derived from a quarterly Unemployment Insurance (UI) tax report, but it comes from the detailed report. It only contains an individual's SSN, UI number of that individual's employer, and the wages paid to that individual by that employer during the quarter. An individual will have a record for each UI covered employer for which he/she worked in the quarter.

Endnotes

1 Executive Office of the President, Office of Management and Budget, ***Standard Industrial Classification Manual***, 1987.

2 Wyoming Department of Employment, Research & Planning, ***Where Are the Jobs? What Do They Pay?: 1998 Annual Covered Employment and Wages***, December 1999.

3 Sherry Yu, "Update: New Business Formation in Wyoming," ***Wyoming Labor Force Trends,*** January 1999, pp. 3-9. See also, Mike Evans, "Which Type of Businesses Create Jobs for Wyoming's Economy?" ***Wyoming Labor Force Trends***, September 1999, pp. 1-7.

4 Table 1-1 includes only those firms with employment in all three years, 1996, 1997, and 1998.

5 Wyoming Department of Employment, Research & Planning, ***Wyoming Wage Records 1992-1998: A Baseline Study***, November 1998, p. 1.

6 These individuals did not appear on any of the administrative databases Research & Planning uses for purposes of matching demographic data to wage records through common SSNs.

7 Wyoming Department of Employment, Office of Workforce Development, ***Wyoming Unified Plan***, Chapter 1, Section II (D)(2), Submitted 30 December 1999, http://wydoe.state.wy.us/workforce/unified/unified%20plan.htm (August 17, 2000).

8 Rich Peters, "The Importance of Major Industry to Wyoming's Gender Pay Gap, Part One," ***Wyoming Labor Force Trends***, July 2000, pp. 1-5. This is the first of a three part series planned for publication in ***Trends***. Therefore, the discussion on gender and earnings in this publication is limited to a brief description.

9 Wyoming Department of Employment, Research & Planning, ***Wyoming Wage Records 1992-1998: A Baseline Study***, November 1999, p. Appendix C-2. The attachment measure is an attempt to characterize attachment of individuals using quantitative measures and measures of interactive processes, while the utilization index in Table 2-2 in the present publication represents an attempt to quantify the efficiency with which industries utilize labor.

10 Wyoming Department of Employment, Research & Planning, ***Outlook 2000: Joint Economic & Demographic Forecast to 2008***, February 2000, p. 11.

11 Male workers in Transportation, Communications & Public Utilities (TCPU) very likely comprise more than 65.3 percent of the industry's workforce, especially when factoring in those industry workers for whom demographic data are not available (14.1%).

12 Department of Labor, Bureau of Labor Statistics, "Occupational Employment Statistics: New and Emerging Occupations," n.d., http://stats.bls.gov/oes/oes%5Fnew.htm (August 15, 2000).

13 Internal Revenue Service, "1997–1998 State to State Migration Flows: Inflow To and Outflow from Wyoming," 1999.

14 Department of Labor, Bureau of Labor Statistics, "Occupational Employment Statistics: New and Emerging Occupations," n.d., http://stats.bls.gov/oeshome.htm (August 15, 2000).

15 In the future, Research & Planning or others could use the same type of skills analysis to examine the fastest growing occupations (see Table 3-3), occupations within a specific industry (e.g., Retail Trade or Telecommunications), or occupations with high rates of employee turnover. These O*Net skill codes could also be linked through occupational code crosswalks to the Classification of Instructional Program (CIP) Codes used by technical and higher educational programs. CIP codes can be used to identify what types of local or statewide occupational training are currently being taught in Wyoming or adjacent states — and what skills training opportunities are currently in short supply or altogether unavailable.

16 OES code is a unique number assigned to an occupation. Further information is available from the Bureau of Labor Statistics Internet site at http://stats.bls.gov/oeshome.htm.

17 According to the Statistical Information Service of the Internal Revenue Service (IRS), the five states to which Wyoming residents are most likely to relocate are Colorado, Utah, Montana, Texas, and California.

18 Phil Brooks and Mike Evans, "Population Migration Flows Among the Mountain & Plains States," ***Wyoming Labor Force Trends***, September 1998, pp. 6-8.

19 Michael Miller, "The Public-Private Debate: What Do the Data Show?," ***Monthly Labor Review*** 119, No. 5, 1996, pp. 18-29.

20 Department of Labor, Bureau of Labor Statistics, "National Industry-Occupation Employment Matrix: About the Numbers," 1998, http://stats.bls.gov/asp/oep/nioem/empioan.asp (August 30, 2000).

21 Department of Labor, Bureau of Labor Statistics, "1998 Covered Employment and Wages CD-ROM1," Version 1, December 1999.

22 Wyoming Department of Employment, Research & Planning, "Analysis of State Government Attrition for Selected Occupations," Submitted to Wyoming Legislative Services Office, Program Evaluation Staff, pursuant to MOU with Department of Employment, Research & Planning, March 10, 2000. This report was used in preparation of Wyoming Legislative Service Office, ***Turnover and Retention in Four Occupations***, May 2000, http://legisweb.state.wy.us/progeval/reports/2000/turnover/TOC.htm (August 30, 2000).

23 An **establishment** is the physical location of a certain economic activity, for example, a factory, mine, store, or office. Generally a single establishment produces a single good or provides a single service. An enterprise (a private firm, government, or non-profit organization) could consist of a single establishment or multiple establishments. A multi-establishment enterprise could have all its establishments in one industry (i.e., a chain), or could have various establishments in different industries (i.e., a conglomerate).

24 Wyoming Department of Employment, Research & Planning, ***Wyoming Wage Survey***, January 2000.

25 The ES-202 program derives its data from quarterly tax reports submitted to State Employment Security Agencies by employers subject to State Unemployment Insurance (UI) laws and from Federal agencies subject to the Unemployment Compensation for Federal Employees (UCFE) program. These reports provide information on the number of people employed and the wages paid to the employees each quarter. The program obtains information on the location and industrial activity of each reported establishment, and assigns location and standard industrial classification codes accordingly. This establishment level information is aggregated, by industry code, to the county level, and to higher aggregate levels.

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Evans, Mike. "Which Type of Businesses Create Jobs for Wyoming's Economy?" ***Wyoming Labor Force Trends***, September 1999, pp. 1-7.

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