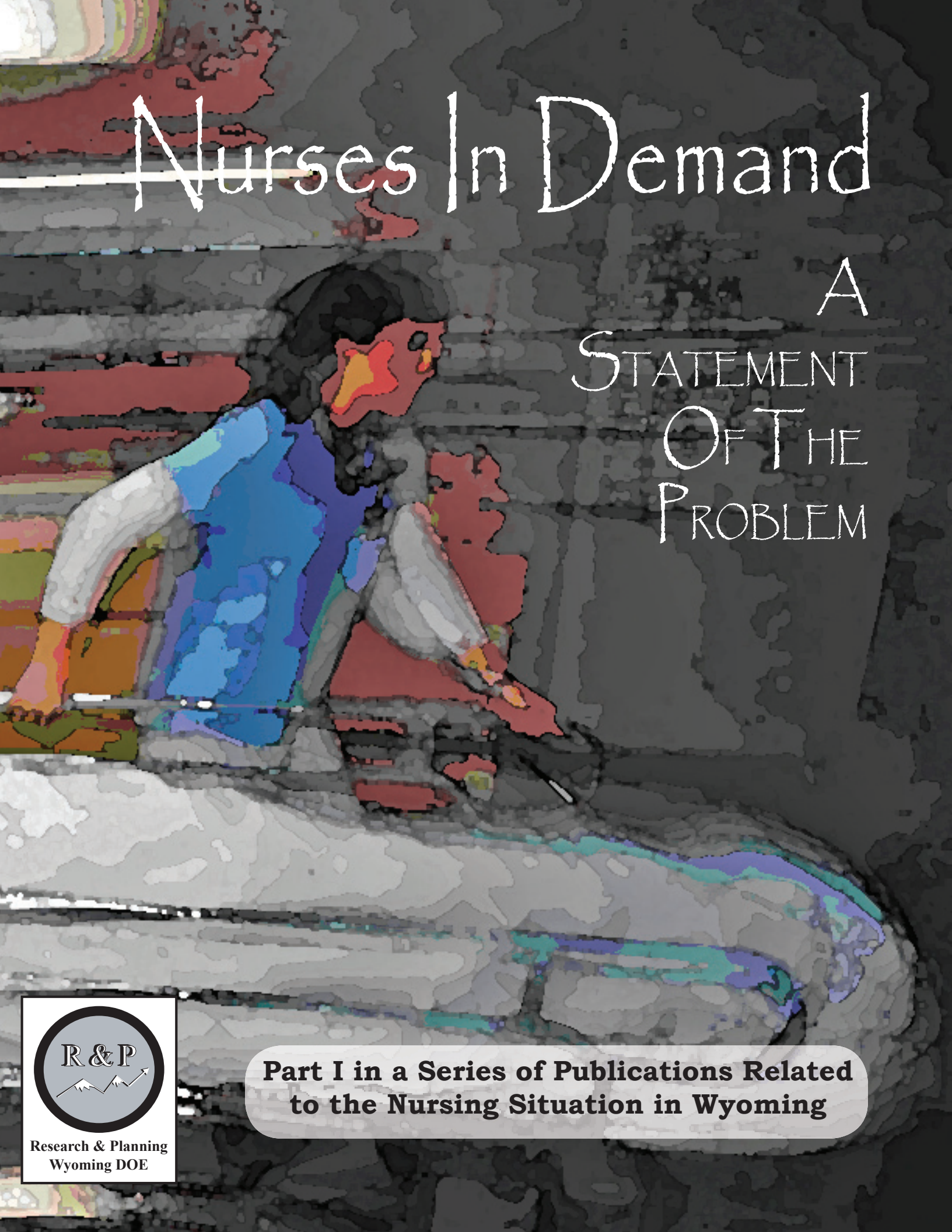

Nurses In Demand

A Statement Of The Problem

Part I in a Series of Publications Related to the Nursing Situation in Wyoming

Research & Planning
Wyoming DOE

A summary of this report is available at Research & Planning's Nursing Studies website: http://doe.state.wy.us/LMI/nursing.htm

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Nurses in Demand:
A Statement of the Problem

Wyoming Department of Employment
Gary W. Child, Director
Internet Address: http://doe.state.wy.us

Research & Planning
Tom Gallagher, Manager

Prepared by:
Carola Cowan
Sylvia D. Jones
Lisa Knapp
Douglas W. Leonard
Sara Saulcy

Edited by:
Phil Ellsworth
April Szuch

Reviewed by:
David Bullard
Valerie A. Davis
Carol Toups

Submitted for Publication March 2008

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Research & Planning
P.O. Box 2760
Casper, WY 82602-2760
Phone: (307) 473-3807
Fax: (307) 473-3834
Website: http://doe.state.wy.us/LMI/
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Table of Contents

Chapter 2 Equation, Figures, and Tables

Chapter 3

A Comparison of Employment and Wages in Health Care in Wyoming, 2000 to 2007 3.1

Chapter 3 Figures and Tables

Chapter 4 Tables

U.S. and Wyoming Demographic Profile

by: Sara Saulcy, Senior Economist

The aging of the population, in particular the baby boom generation (individuals born between 1946 and 1964), is predicted to have wide-ranging impacts on Wyoming and the nation in the coming decades. In 2006, the estimated U.S. median population age (half of the values are above and half of the values are below) was 36.4; Wyoming's median age was 37.1 (U.S. Census Bureau, n.d.). By 2030, nearly one in five U.S. adults will be 65 or older. Health care, housing, transportation, and consumption patterns will be transformed by the changing needs of an older population.

This chapter focuses on health care economics, with emphasis on demographics as they relate to the changing health care system. **Chart 1.1** illustrates how shifting demographics affect the health care structure. We examine these issues as follows:

- Demographic history in the U.S. and Wyoming and projected changes.
- The changing prevalence of injuries and diseases as people age.
- Impacts on the health care delivery structure, including the skills of providers and the physical resources (e.g., hospitals, long-term care centers, technology) required to provide care.
- The health care workforce, including educators and providers, is aging. Consequently, a substantial number of replacements for retiring workers will be needed.

Aging Population Trends

On a year-to-year basis, overall population age does not change substantially; this analysis compares demographics from 1985 to 2005. **Table 1.1** and **Figure 1.1** show selected U.S. state population estimates and percentage distributions, respectively, by age group. The states in the table and figure were chosen to evaluate how Wyoming compares and contrasts to other areas.

In 1985, children from 0 to 4 years old constituted 7.5% of the U.S. population. By 2005, the percentage of individuals in this age group fell to 6.9%. In contrast, individuals 65 and older accounted for 11.9% of the population in 1985; by 2005 the percentage rose to 12.4%. The largest net increase among states in the population over 65 was in California (more than one million). Only the District of Columbia experienced a net decrease (-9,014) in the 65 and older population. On a percentage basis, the largest growth in this age group occurred in Hawaii (4.2%). Nine of the 50 states saw a decline in the percentage of the population 65 and older. However, none experienced a decrease of more than 1.0%.

In Wyoming, the change was more pronounced. Children age 0 to 4 made up 10.0% of the state's population in 1985; individuals age 65 and over made up 8.3%. By 2005, the percentage of 0- to 4-year-olds declined to 6.1%, while the percentage of the population 65 and over rose to 12.2%. Only Hawaii had a higher increase in the percentage of individuals 65 and over (3.9%).

The U.S. Census Bureau (2004) projects the number of adults over 65 years of age

will more than double between 2000 and 2030 (see Figure 1.2). In 2000, there were approximately 35 million individuals over 65. By 2030, the number is projected to grow to more than 70 million. The smallest net and percentage growth is projected for individuals 35-44 years of age (1.5 million; 3.4%).

In contrast to U.S. population trends, Wyoming is projected to see flat to declining population growth in all but the 65 and older age group (see Figures 1.3 and 1.4). Both figures show projected population growth for 2000 to 2030. Figure 1.3 illustrates population projections for all age groups, while Figure 1.4 compares projections for individuals 18 to 24 (potential labor force replacements) and 65 and older (possible exiters from the labor market).

As the figures demonstrate, the population of individuals 65 and older in Wyoming is projected to more than double in the coming decades. In contrast, the under-20 population is expected to fall by nearly one fourth (-23.6%; see Figure 1.3). The 18- to 24-year-old population (potential replacement workers) is projected to be nearly 100,000 fewer than the number of individuals 65 and older (see Figure 1.4). As a consequence, in order to at least keep the economy at a status quo, Wyoming likely will need to either retain older workers or import additional labor. This challenge is expected to occur at a time when all other states are going through a similar process.

Projected percentage changes in population by Wyoming county and age group are shown in Map 1.1 (Also see Chapter Five for detailed estimates and projections by county and age group). Population growth in all counties is expected to be led by those over 55 years of age. Campbell and Teton counties are expected to lead the state in growth in this age group (156.5% and 137.4%, respectively). Among the population under 25, Niobrara is projected to have the largest percentage decline (-31.2%) followed by Hot Springs County (-21.3%). Only four counties, Campbell, Johnson, Sublette, and Teton, are projected to see population increase in all age groups; the remainder are projected to lose population in one or more age groups.

The precision of these projections depends on the scope and duration of the current economic expansion. Job growth into the first quarter of 2007 was progressing at a rate similar to several prior quarters. Job gains were greatest in construction, while mining led growth in total payroll (Bullard, 2007). In the most recent economic and demographic forecast produced by the Economic Analysis Division of the Wyoming Department of Administration & Information, Liu (2007) notes:

> …in the near and midterm, the energy industry will continue to support strong, but decelerating growth for the state economy. The state's tight labor market and the high paying nature of energy related jobs will support strong wage and income growth. Over the long term, Wyoming's very low industrial diversity and/or high dependence on the energy sector will be a limiting factor, particularly if energy prices drop lower and faster than expected. (p. iii)

Health Care Requirements and Projected Changes in Use

Americans born in 2001 have a life expectancy 30 years longer than those born in 1900 (77 years compared to 47 years). As life expectancy has increased, the leading causes of death have shifted from infectious diseases and acute illnesses to chronic

diseases and degenerative illnesses (Centers for Disease Control [CDC] and Prevention and The Merck Company Foundation, 2007). Variations in illness prevalence and services usage in Wyoming by selected age groups are illustrated in **Chapter Four**. The National Center for Health Workforce Analysis (NCHWA; 2003) points out that:

> The greater medical needs of the elderly, combined with access to health care services through Medicare and Medicaid have resulted in much higher per capita use of health care services for the elderly compared to the non-elderly. On a per capita basis, the elderly have more hospital inpatient days, outpatient visits, and emergency department visits. Relative to the non-elderly, they also have more home health visits per capita and are more likely to be in a long-term care facility…Not only does per capita use of health care services within a delivery setting increase with age, but also the type of services used by the elderly (and the mix of health professionals who provide these services) differs from the non-elderly.

For example, the National Institute on Aging (2003) projects that the number of people affected by Alzheimer's disease will grow to more than 5.7 million by 2020, and to 7.7 million by 2030. The majority of those affected will be 75 and older. In addition, arthritis and similar conditions, which are associated with chronic pain and functional limitations, currently represent the leading cause of disability in the U.S., affecting nearly 43 million adults. By 2030, the number of adults with arthritis is projected to grow to 67 million, of which 54% will be 65 or older (CDC, 2007).

If health care usage remains the same over time, NCHWA estimates that, between 2000 and 2020, the growth and the aging of the U.S. population will result in a 40% increase in nursing home residents; a 36% increase in home health visits; a 17% rise in emergency room visits; a 20% gain in nonemergency outpatient visits to hospitals; and a gain of 30% in inpatient days at general, short-term hospitals (NCHWA, 2003).

While usage patterns by the elderly may remain the same over the 2000-2020 period, several factors could impact future usage patterns:

- Changing population needs, even when controlling for age and other demographic characteristics;
- A constantly changing health care industry;
- Current health care use trends may not be sustainable as cost pressures intensify;
- The possible emergence of new diseases; and
- Advances in technology, such as new or improved medications and equipment, which will change services delivery (NCHWA, 2003).

The amount of time that physicians devote to the care of the older population is also likely to change. NCHWA (2003) estimates that 32% of physicians' time in 2000 was spent with patients 65 and older. Provided that physician staffing levels and productivity as well as health care use patterns remained the same, physicians would spend an estimated 39% of their time providing services to patients 65 and over by 2020.

Health Care Delivery

From the first quarter of 2000 to the first quarter of 2007, the number of Wyoming health care establishments grew, as did

employment in health care. However, employment in the industry grew in proportion to the labor force, accounting for roughly the same proportion of workers in total employment in 2007 as in 2000.

According to a survey of Wyoming nurses, nearly 60% of nurses in the state are 45 or older, indicating that a large share of the current nursing workforce in the state will retire or approach retirement age at the same time their skills will be in greater demand. Additional details about the survey are included in **Chapter Four**.

The NCHWA (2003) report identifies four major health care-related implications of an aging population:

- If health consumption patterns and physician productivity remained constant over time, the aging population would increase the demand for physicians per 1,000 people from 2.8 in 2000 to 3.1 in 2020. Demand for registered nurses (RNs) per 1,000 would increase from 7 to 7.5 during this same period.
- In 2000, physicians spent an estimated 32% of patient care hours providing services to the age 65 and older population. If current consumption patterns continue, this percentage could increase to 39% by 2020.
- The aging of the health workforce raises concerns that many health professionals will retire about the same time that demand for their services is increasing. Also, the elderly population will grow at a faster rate than the working-age population.
- The rise in health care expenditures associated with the rapid increase in the elderly population will likely place pressures on the Medicaid and Medicare programs to control health care costs. Such measures would likely decrease the demand for and supply of health professionals.

The median age of the U.S. workforce in 1992 was 36.6; by 2012 it will be 41.4. By comparison, the average age of an RN in 1983 was 37; by 2000 it was 45. By 2010, it is estimated that more than 40% of RNs will be age 50 or older (Blitz, 2006). On average, most nurses retire between the ages of 55 and 58 (Nursing, 2006).

The consequence of retiring health care workers is that the ratio of staff to patients declines (Reinhardt, 2003). Declining proportions of the population ages 18-30 raises concerns about attracting an adequate number of workers into health care (NCHWA, 2003). Job openings that are the result of exiting from the labor force (temporarily or permanently) because of retirement, family obligations, or other reasons are referred to as replacement need. The Wyoming Department of Employment, Research & Planning (R&P) section projects that, for the period 2006-2014, replacement need in the health care industry for RNs in Wyoming is expected to be 2,094 nurses, the majority of whom work in hospitals (1,367; see also **Chapter 2**).

A slowdown in the growth of available labor is not simply a Wyoming phenomenon. Over the 2004-2014 period, according to Toossi (2005)

> …the labor force will continue to age, with the annual growth rate of the 55-and-older group projected to be 4.1 percent, 4 times the rate of growth of the overall labor force. By contrast, the annual growth rate of the 25-to-54 year age group will be

> 0.3 percent, and that of the young age group consisting of 16-to-24-year-olds will be essentially flat. (p. 25)

Projected shortages could also be intensified by the reduced availability of health care professions teachers. The average age of nurse educators in the U.S. is approximately 53, many of whom are expected to start retiring or cutting back on hours in the next few years (Whitlinger, 2004). In addition, the problem may be exacerbated by teacher pay issues. Judith Shindul-Rothschild, Dean of the School of Nursing at Boston College, says,

> My brand new BSNs [Bachelor of Science in Nursing] are all making over $50,000 a year. With overtime, some of them will make $70,000. The "number one" problem in nursing education right now is that teachers' salaries can't compete with the private sector. (p. 16)

The mix of institutions and people providing health care is likely to shift toward those that provide care to older individuals as their numbers dominate the health care system. Among the specialty medical care areas expected to see increasing demand are cardiovascular diseases, pathology, and general internal medicine. In addition, if disability rates among the elderly decline to the point that the overall elderly population requires less intensive care in nursing homes, there will be an increase in the demand for services provided in homes by physical therapists, nurses, home health aides, and other professionals (NCHWA, 2003).

Future Research

Much of the existing literature on demographic changes is focused on the aging of the population overall and the aging of the health care workforce. Less attention has been paid to the aging of health care professions educators. However, health care teachers are no less critical to the functioning of the health care system, as they provide the training for prospective replacements for aging health care professionals. This issue is the focus of a report by R&P later in this series.

Another potential area of study is a focus on the demographics of health care providers in Wyoming. Although literature exists at the national level about providers' demographics (see **http://doe.state.wy.us/LMI/nursing_lit_review.pdf** for R&P's literature review on the subject), less is known and understood at state and local levels. With Wyoming already experiencing health care provider shortages in several counties (see **Chapter Three**), there is a critical need to know where possible shortages may persist or develop. Doing so will help in developing potential solutions.

Summary

Clearly, demographics will drive demand for the total number of nurses and will have a major impact on the types of services they will provide, as well as the setting in which they are provided. With much of the health care workforce anticipated to retire at the same time that their services are increasingly needed, finding replacements will become even more critical. Increasing the supply of health care workers is likely to be even more challenging given the expected lack of health care educators at the same time that demand for new entrants is increasing. The combined impact will likely put pressure on wages to attract new entrants into all health care fields. The magnitude of growth in the size of the population 65 and older will contribute to, but not be the sole source of, health care cost increases. There also is a need for

understanding how demographics affect health professions educators.

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educators – nursing's newest threat. *Revolution: The Journal for RNs & Patient Advocacy.* Retrieved December 10, 2007, from http://search.ebscohost.com/login.aspx?direct=true&db=f5h&AN=14356159&site=ehost-live

Chart 1.1: Wyoming's Aging Population and Effects Related to Health Care

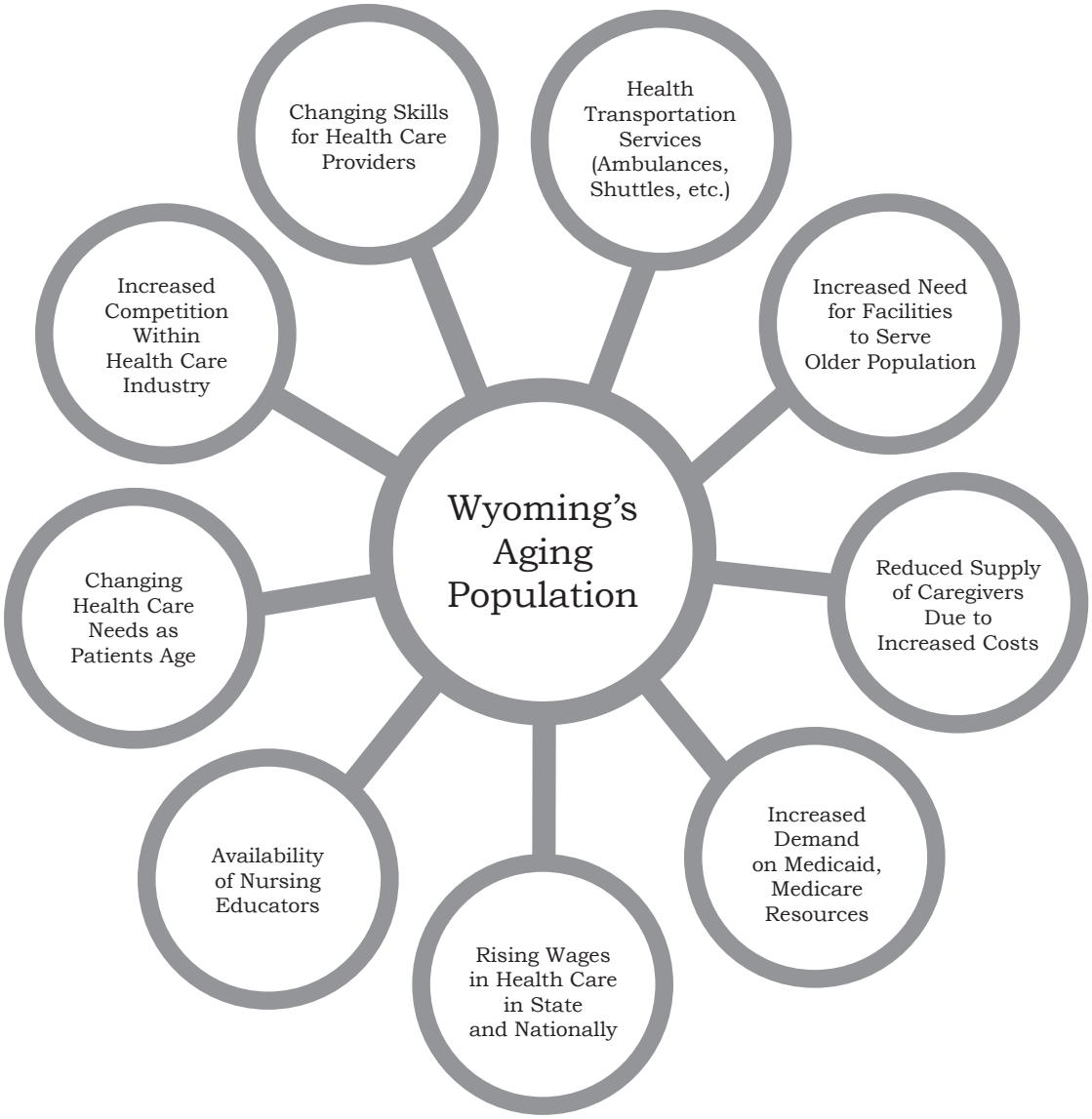
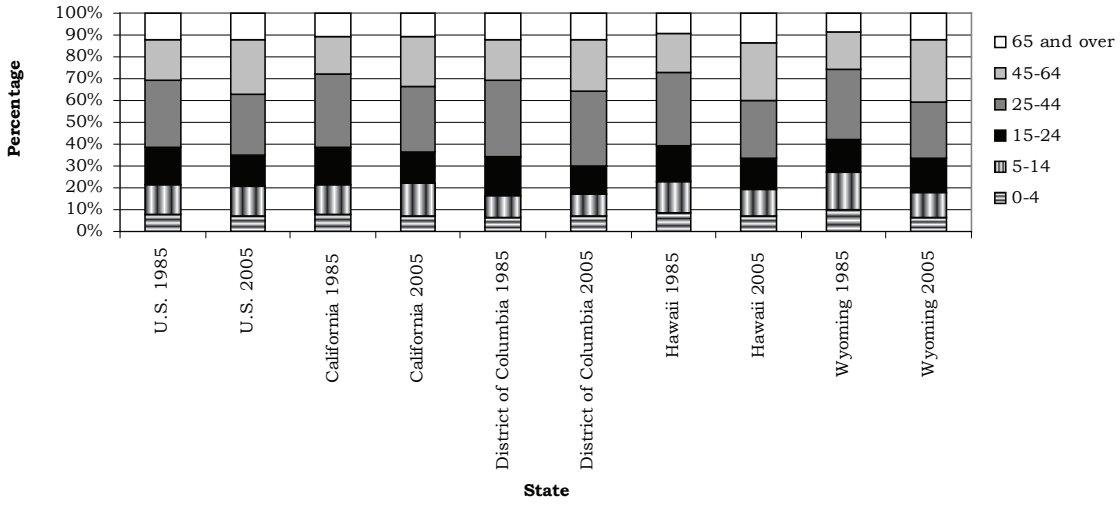
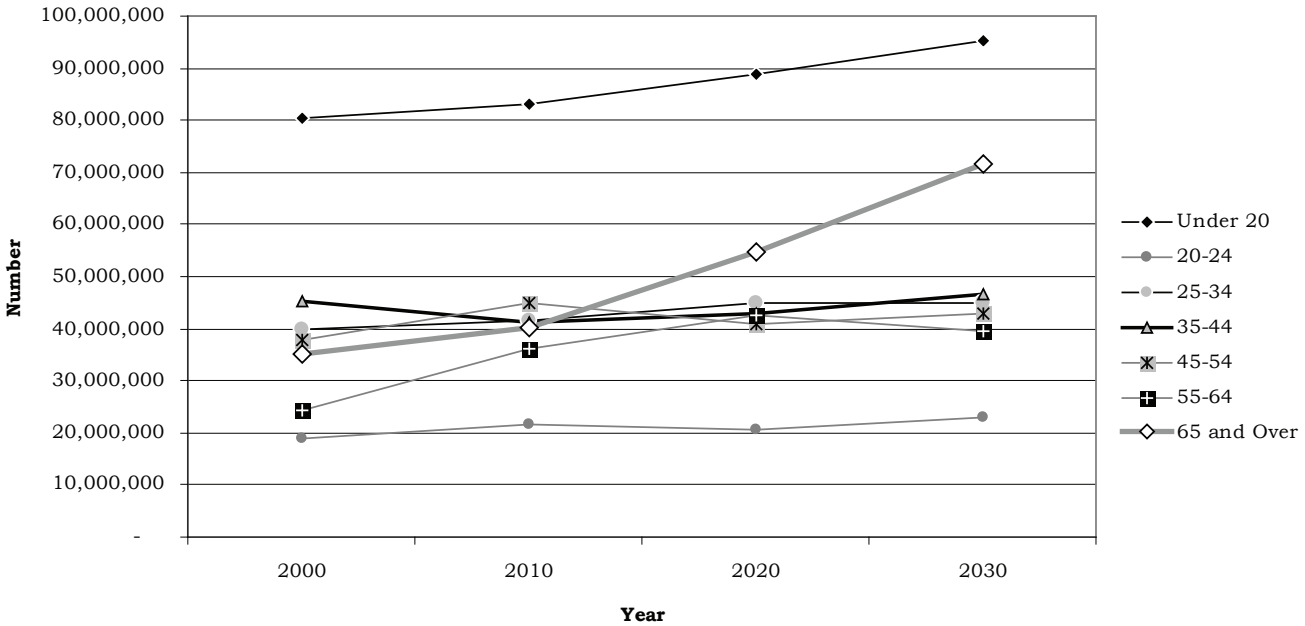


Figure 1.1: U.S. Estimated Distribution of Population for Selected States by Age Group, 1985 and 2005



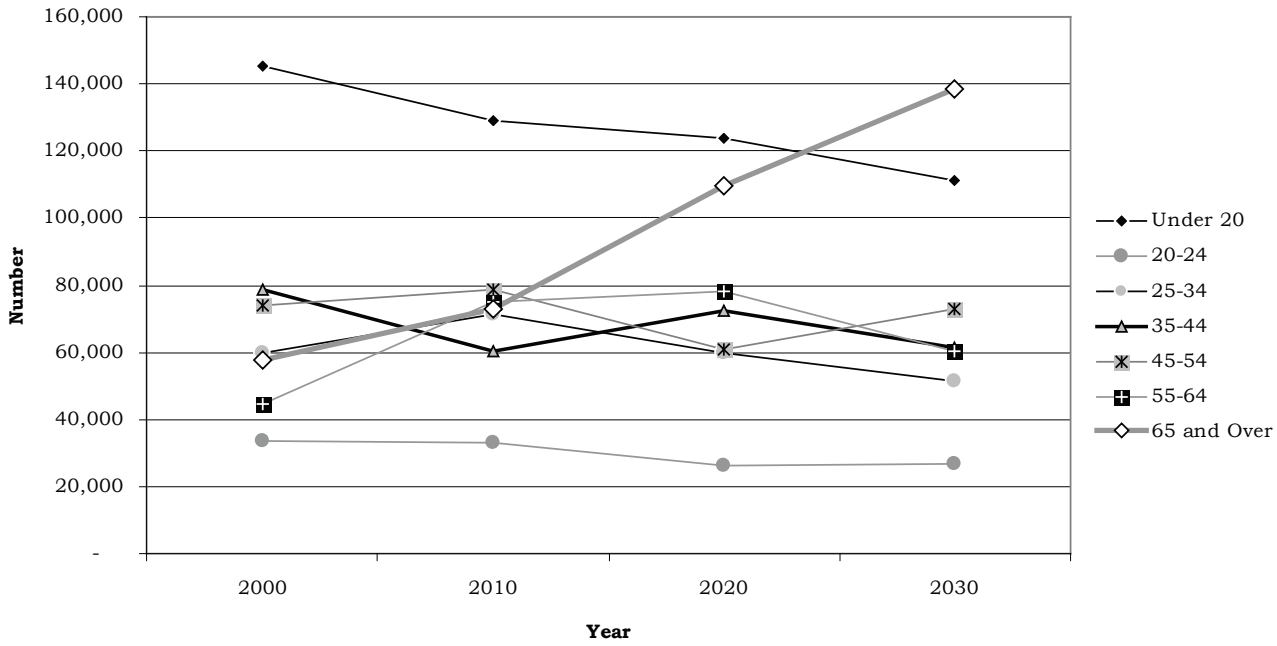
For other years and states, go to U.S. Department of Health & Human Services, Centers for Disease Control & Prevention, National Center for Health Statistics. (n.d.). *Trends in health and aging, resident population, nation and state.* Retrieved October 8, 2007, from http://www.cdc.gov/nchs/agingact.htm

Figure 1.2: U.S. Population Projections by Age Group, 2000-2030



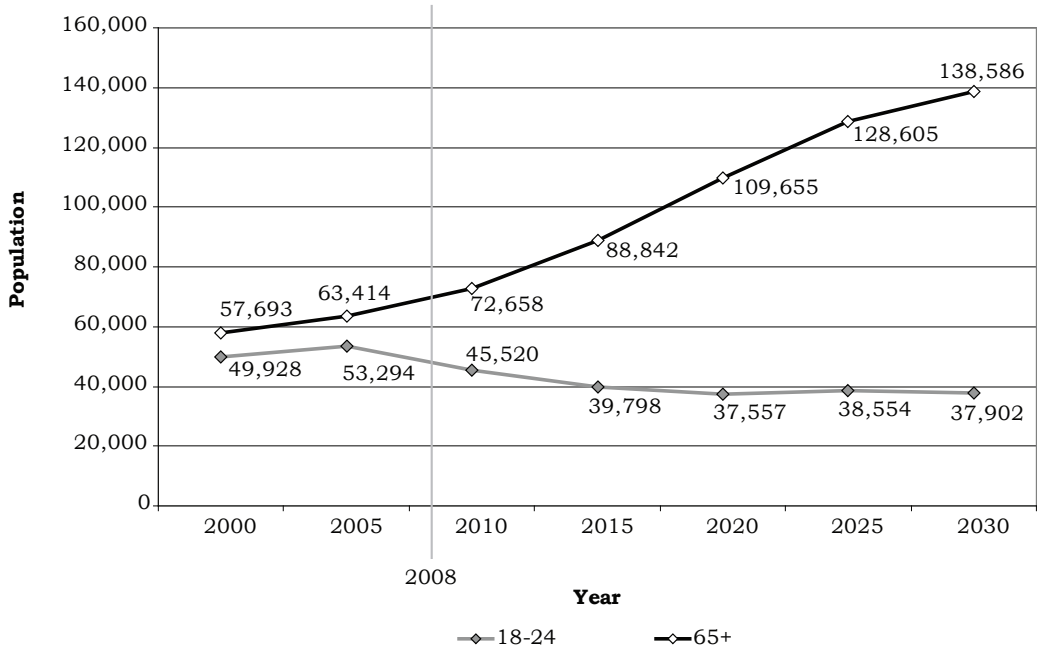
Source: U.S. Census Bureau, Population Division. (2005, April 21). *Population pyramids and demographic summary indicators for U.S. Regions and Divisions.* Retrieved November 26, 2007, from http://www.census.gov/population/www/projections/regdivpyramid.html

Figure 1.3: Wyoming Population Projections by Age Group, 2000-2030



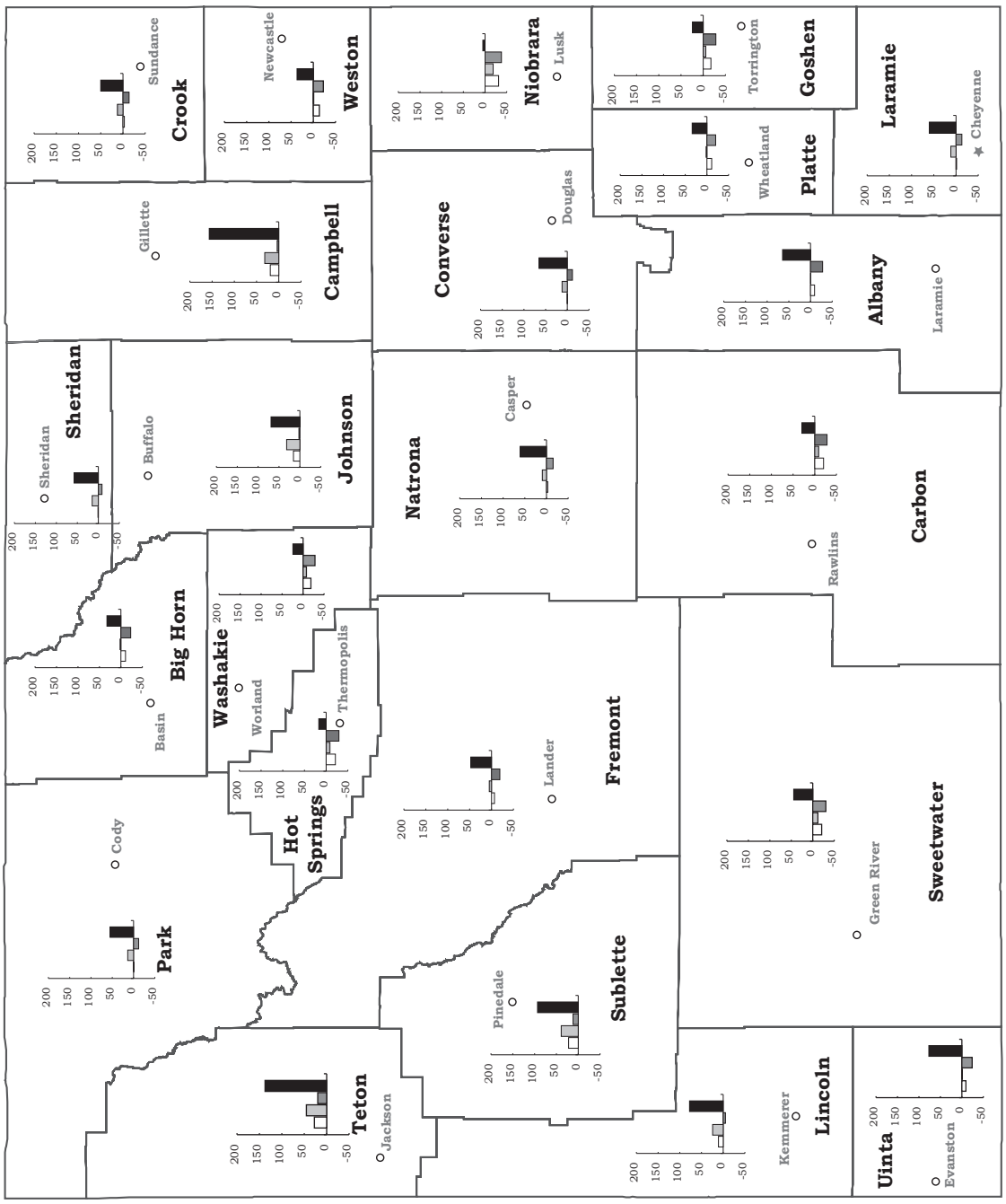
Source: U.S. Census Bureau, Population Division. (2005, April 21). *Interim State Population Projections, 2005.* Retrieved October 10, 2007, from http://www.census.gov/population/www/projections/statepyramid.html

Figure 1.4: Projected Population Growth for Wyoming, 2000-2030



Data source: Wyoming and County Population Projections by Age: 2003 to 2020. Wyoming Department of Administration and Information, Economic Analysis Division (http://eadiv.state.wy.us). Wenlin Liu. Internet release October 21, 2004.

Map 1.1: Projected Percentage Changes in Population by Wyoming County and Age Group, 2000 to 2020



Source: Wyoming Department of Administration and Information, Economic Analysis Division. (2004, October 21). *Wyoming and county population projections by age, 2003-2020.* Retrieved October 10, 2007, from http://eadiv.state.wy.us/pop/agsx00_20.htm.

Table 1.1: U.S. Population Estimates For Selected States by Age Group, 1985 and 2005

		Age Group						
Year	**State**	**0-4**	**5-14**	**15-24**	**25-44**	**45-64**	**65 and over**	**All ages**
1985	**U.S.**	17,841,621	33,692,290	39,991,843	73,387,437	44,594,425	28,416,179	237,923,795
	California	2,117,712	3,579,004	4,469,117	8,832,544	4,673,263	2,769,462	26,441,102
	District of Columbia	39,896	63,606	112,934	224,175	117,713	76,222	634,546
	Hawaii	88,358	148,873	173,081	344,928	185,264	99,169	1,039,673
	Wyoming	49,803	84,284	75,561	159,952	88,496	41,596	499,692
2005	**U.S.**	20,303,724	40,396,536	42,076,849	84,005,376	72,837,806	36,790,113	296,410,404
	California	2,686,184	5,380,033	5,221,565	10,674,944	8,300,847	3,868,574	36,132,147
	District of Columbia	38,320	58,013	68,534	190,286	128,160	67,208	550,521
	Hawaii	90,356	159,071	178,457	336,791	335,981	174,538	1,275,194
	Wyoming	31,065	61,360	78,872	130,031	145,929	62,037	509,294
Net Change 1985-2005	**U.S.**	2,462,103	6,704,246	2,085,006	10,617,939	28,243,381	8,373,934	58,486,609
	California	568,472	1,801,029	752,448	1,842,400	3,627,584	1,099,112	9,691,045
	District of Columbia	-1,576	-5,593	-44,400	-33,889	10,447	-9,014	-84,025
	Hawaii	1,998	10,198	5,376	-8,137	150,717	75,369	235,521
	Wyoming	-18,738	-22,924	3,311	-29,921	57,433	20,441	9,602

For other years and states, go to U.S. Department of Health & Human Services, Centers for Disease Control & Prevention, National Center for Health Statistics. (n.d.). *Trends in health and aging, resident population, nation and state.* Retrieved October 8, 2007, from http://www.cdc.gov/nchs/agingact.htm

Table 1.2: Wyoming Nurses by Age Group and High School Location

		Where Respondent Attended High School			
Age group		**Wyoming**	**Out of State**	**Unknown**	**Total**
20 - 24	**N**	**12**	**2**	**0**	**14**
	Row%	85.7%	14.3%	0.0%	100.0%
	Col%	1.3%	0.2%	0.0%	0.6%
25 - 34	**N**	223	88	7	318
	Row%	70.1%	27.7%	2.2%	100.0%
	Col%	24.8%	6.7%	13.5%	14.1%
35 - 44	**N**	276	180	10	466
	Row%	59.2%	38.6%	2.1%	100.0%
	Col%	30.6%	13.8%	19.2%	20.6%
45 - 54	**N**	236	508	15	759
	Row%	31.1%	66.9%	2.0%	100.0%
	Col%	26.2%	39.0%	28.8%	33.6%
55 - 64	**N**	143	330	16	489
	Row%	29.2%	67.5%	3.3%	100.0%
	Col%	15.9%	25.3%	30.8%	21.7%
65+	**N**	8	44	2	54
	Row%	14.8%	81.5%	3.7%	100.0%
	Col%	0.9%	3.4%	3.8%	2.4%
Unknown	**N**	3	152	2	157
	Row%	1.9%	96.8%	1.3%	100.0%
	Col%	0.3%	11.7%	3.8%	7.0%
Total	**N**	901	1,304	52	2,257
	Row%	39.9%	57.8%	2.3%	100.0%
	Col%	100.0%	100.0%	100.0%	100.0%

Projections of Registered Nurses Needed to 2014

by: Doug Leonard, Senior Economist

Introduction

This chapter covers Research and Planning's (R&P) projections of the additional number of nurses needed to fill the total demand in Wyoming's health care industry in the near future (to 2014). The projections presented here account for: 1) the additional number of nurses needed due to anticipated employment growth in the health care industry, and 2) the additional number of nurses needed due to replacement for those who will retire, quit, or be terminated during the projection period. Accounting for both growth and replacement need are necessary when projecting the total demand for nurses.[1]

Two projections scenarios are explored in this chapter. The first is referred to as *current policy*. The current policy scenario takes into account recent staffing pattern trends that show, for example, that nurses make up an increasing proportion of hospital employment.[2] Projections to 2014 developed under the current policy scenario allow the staffing pattern growth trend to continue at the same rate that it has in the recent past. The second scenario, referred to as *policy change,* does not allow for additional growth due to staffing pattern changes. For this scenario to become a reality, the health care industry would need to make conscious policy-directed decisions to contain growth in the ratio of nurses to all employees. This may or may not be a practical reality but is presented here for illustrative purposes.

Major Findings

Assuming no changes to the current policy scenario, R&P projections show that Wyoming's health care industry will need a total of 3,307 more nurses by 2014 than were employed in 2006 (estimated at 3,145) to fill the projected demand. This represents more than double the number of RNs working in health care between 2006 and 2014. Assuming that growth as a result of recent staffing pattern trends can be held constant at current levels through policy changes, Wyoming's health care industry will need only an additional 2,935 nurses by 2014 to fill projected demand. The policy change scenario represents a savings of approximately 400 nurses.

The remainder of this chapter presents the various methodologies used to create projections and presents the projections components for nurses in detail among ambulatory health care services, hospitals, and nursing & residential care facilities.

Development Methodology

When forecasting the number of registered nurses (RNs) needed, it is important to first ascertain the key components of change. What are the drivers of future need regarding these workers? According to prior research (Census Bureau, 2007), Wyoming will have an older population than most states when the boom

1 The reader should be aware that there are always vacancies for nurses in various parts of the health care industry, for example, a doctor's office having a vacant position for a nurse for which they are advertising and attempting to fill. The projections presented here do not account for ongoing vacancies.

2 A high-level hospital administrator, during a recent informal interview, suggested that offering more flexible schedules to nurses has caused staffing pattern changes in their facility and increased the number of nurses they need (e.g., using two part-time nurses to cover shifts previously covered by one full-time nurse).

generation (those born between 1946 and 1964) retires. Consequently, the demand for specialized skills to provide medical services that serve an older population will increase (see **Chapter 1**). Furthermore, older people demand more medical services (Bennett & Flaherty-Robb, 2003). We expect the combined effect of aging and specialization to accelerate the need for all types of medical professionals, especially RNs. While the prior chapter focused on demographic changes and their impacts on health care, in this chapter, we examine how service demand and attrition factors might influence employment growth for RNs in health care. Specifically, we examine how employment growth and worker attrition play key roles in determining possible future staffing levels required to maintain or improve service quality. The projections consider outcomes that include both action and inaction (status quo). They can provide policymakers with direction to mitigate possible adverse impacts.

Growth Projections Methodologies

To develop projections, we first must understand past and current RN employment trends. To do so, a data file containing information on Wyoming's RN population was obtained from the Wyoming State Board of Nursing (WSBN, 2007). The WSBN files contain nurse license information from 1992 through 2006. These data were combined with employment data from the Wyoming Wage Records Database[3] and the Bureau of Labor Statistics' (BLS) Quarterly Census of Employment and Wages (QCEW) program.[4] The QCEW files contain business data from first quarter 1992 though fourth quarter 2006. The Wage Records file contains individual worker and wage information from first quarter 1992 to fourth quarter 2006.

Figure 2.1 shows the proportion of RNs employed in ambulatory health care services from first quarter 1992 through second quarter 2005. The proportion of employment is calculated by dividing the number of RNs working in the industry each quarter by the number of jobs worked in the industry. The proportion of RNs employed in this industry increased on an almost straight-line trajectory from 4.6% in first quarter 1992 to 8.3% in second quarter 2005. As can be seen from the displayed regression trend line, the proportion of RNs to industry employment increased approximately 60% from first quarter 1992 to second quarter 2005.

With the historical trend in nurse staffing pattern changes established, we extended the line to fourth quarter 2014. Then we multiplied the average of the proportion estimated by the trend line from 2014Q1 to 2014Q4 with the projected industry employment in 2014 (Leonard & Bullard, 2006). This product represents the projected number of RNs required in 2014 due to industry employment growth and projected changes in RN staffing levels. This constitutes the *current policy* methodology (i.e., allowing current trends in staffing patterns to continue forward unabated).

Figure 2.1 presents two possible projection outcomes. The first outcome is defined as *current policy*. As mentioned above, the current policy outcome assumes that no policy changes take place and current trends continue into the future. The second outcome is *policy change*. The

3 Wage Records is an administrative database. Each employer in the state that has employees covered under Unemployment Insurance by law must submit quarterly tax reports to the state showing each employee's social security number and wages earned. Research & Planning uses the data for statistical analysis. For more information see Wayne M. Gosar, "Insurance Wage Records Summary: A New Way to Look at Wyoming," *Wyoming Labor Force Trends*, May 1995.

4 Readers can review QCEW program information at http://www.bls.gov/cew/cewover.htm.

policy change case assumes that the ratio of RNs working to total jobs worked remains constant in ambulatory health care services and hospitals at the 2005Q2 level. In other words, for the *policy change* option, staffing patterns (nurses relative to total employment) are held constant at the 2005Q2 level rather a continuation of current employment growth trends to 2014.[5] These scenarios are two possible outcomes given different sets of assumptions and are not exhaustive. They serve as a guide for data consumers to understand future demand for RNs.

Replacement Projections Methodologies

The method used to develop RN replacement projections is somewhat different from the method used to construct the employment growth projections. The prior projections were based on changes in industry employment and employment ratios, while replacement projections were based on the rate at which cohorts of nurses stop working in an industry. A cohort is defined as a group of RNs at a fixed point in time (e.g., RNs working in ambulatory health care services in 2001). We then observed how many of these same nurses were still working in ambulatory health care services each year. The difference between the number working in a future year (C_N) and the number working in 2006 (C_{2006}) is attrition. Only one set of estimates was calculated for RN replacement because of the varied effects of human resource management policies possible at health care institutions.

The number of original RNs still working in the industry is counted each year and used to build trend lines (formulas) to estimate attrition. The formulas allow us to estimate the number of nurses who will need to be replaced in subsequent years after leaving employment in a health care industry. In this case, we estimated the number of the original 2006 group of RNs remaining eight years later in 2014 (C_{2014}). Next, we estimated the proportion of the original industry cohort remaining in eight years (C_{2014}/C_{2006}). This ratio is combined with the 2006 cohort counts (C_{2006}) in **Equation 2.1** to determine industry replacement need in 2014.

Results

If we consider the total RNs required in the three health care industries studied, total additional demand expected is between 2,935 and 3,307 nurses by 2014 (see **Table 2.1** and **Table 2.2**). Average annual additions to the RN pool in health care would need to be between 367 and 414 (average annual need of approximately 391) during the forecast period. It appears that at least some of the additional demand could be mitigated by re-engaging RNs working outside of health care (projected to be between 898 and 976 RNs by 2014). Since those RNs have an active license and still work in Wyoming, a targeted re-engagement program may be effective with this segment of the nurse population.

Ambulatory health care services employment (see **Figure 2.2**) is projected to grow from 7,647 in 2004 to 10,139 in 2014 and the proportion of RNs in ambulatory health care services in 2014 is projected at 11.2%. In the current practice scenario, this yields a total of 1,138 RNs required by 2014, or an increase of 486 from the 2006 level (see **Table 2.1** for the current policy summary).

An increasing ratio of RNs to industry employment can indicate the effects of human resource management policies. First, having more flexible work schedules

5 The policy change case is slightly different in nursing & residential care facilities in that its proportion of RNs working to total jobs worked is allowed to increase in a manner similar to the historical trend shown in hospitals at the end of the series, while the current practice outcome assumes a constant percentage.

may mean more RNs pursue part-time employment opportunities. Second, the increasing acuity of cases associated with an aging population likely means more RNs are required to care for the same number of patients than in the past. Both factors together most likely will lead to an increasing proportion of RNs to total jobs worked.

Under the policy change scenario, we assumed that the RN proportion of employment in ambulatory health care services remains constant at the 2006 level (8.3%). Using the policy change projection, we estimate the number of additional RNs required in ambulatory health care services by 2014 will increase from 165 to 817 (for a complete summary, see **Table 2.2**). Using the attrition methods described previously yields an estimated replacement need by 2014 of 496 RNs (see **Tables 2.1** and **2.2**).

Repeating the projections procedure for hospitals, nursing & residential care facilities, and all other industries yields the remainder of the results shown in **Tables 2.1** and **2.2**. The results for hospitals are much the same as those shown in ambulatory health care services. As **Tables 2.1** and **2.3** demonstrate, the total demand for RNs is expected to be between 1,681 and 1,959 between 2006 and 2014. The result for hospitals is the largest of the three health care industries studied because of its large proportion of RNs relative to employment (see **Figure 2.3**) even though the replacement rate is somewhat less.

The results from long-term care run somewhat counter to those seen in the prior two industries. As noted on **Figure 2.5**, administrative regulations require that these facilities maintain a specific nurse to patient ratio (42 C.F.R. §483.30, 2004). Therefore, a straight-line projection of 5.5% of employment was used in the current practice projection. For the policy choice projection, a trend line with an equation similar to that for hospitals was used because the hospital curve was based on empirical data and an alternative could not be derived or found in related literature. Consequently, the policy choice projection of RNs required (362 per annum, see **Table 2.2**) exceeded the current practice projection of 135 (See **Table 2.1** and **Figure 2.6**). The projected replacement need (policy change) was 231 RNs.

Figures 2.7 and **2.8** display the results for RNs working outside health care. Because their occupations are unknown, we cannot determine whether these RNs work as nurses in the private sector. Because the number of RNs working in those industries is not increasing as quickly as employment, the proportion of RNs declines slowly. In this instance (see **Figure 2.7**), the current policy scenario assumes that the RNs proportion of employment continues to decline following the trend line established by the historical data. The policy change scenario assumes a constant proportion of RN employment, which yields a greater number of RNs over the projection period. The number of additional RNs needed in these industries due to growth (see **Table 2.1**, **Table 2.2** and **Figure 2.8**) is expected to be between 28 and 106 by 2014.

Table 2.3 provides information regarding the components of change in RN demand for the current policy and policy change scenarios. These changes are highlighted in **Figures 2.9** and **2.10**. Although the number of RNs required to meet replacement need is the same in both cases (2,094 RNs), the proportion of total demand represented by replacement demand is less in the policy change scenario (28.7% compared to 36.7% in the current policy case) because of diminished growth need. In both cases, however, the vast majority of labor required to meet demand is due to replacement need.

Mitigating Factors: Potential Establishment Size and Age Effects

It would be incorrect to assume that demand for RNs is uniform across all types of establishments. For example, firms' human resource management policies may differ greatly, as can their general work environments. In this section, we explore how the demand for RN services may vary by examining the proportion of stable (employment for three consecutive quarters) employment by firm size and age in hospitals and nursing & residential care facilities.

Table 2.4 and **Figure 2.11** illustrate how RN demand may vary by nurse age and establishment size. Table 2.4 shows that 33.4% of RNs working in hospitals and nursing & residential care facilities were between 45 and 54 years of age, while only 3.0% of RNs working in 2006Q2 were between 20 and 24 years of age. **Figure 2.11** provides an alternative view of the data. Here we see there were disproportionately lower percentages of RNs in the four youngest age groups (20-24, 25-34, 35-44, 45-54) in small facilities (0.0%, 11.7%, 19.1%, and 20.7%, respectively) compared to large ones (3.0%, 20.6%, 24.5%, and 33.6%, respectively). Conversely, small and medium-size facilities had disproportionately larger shares of RNs in the 55+ age group (40.4%) than did large facilities (18.3%). The effects of RN age on medium-size facilities are expected to be less than small facilities in this regard, but medium-size firms generally have greater proportions of older RNs (23.3% of 55+) than do large facilities (18.3% of 55+). The results indicate that the demand for RNs may adversely affect small and medium-size facilities more than large ones. To this extent, communities with small and medium facilities may have to expend considerably more effort to maintain adequate levels of RN staffing than will communities with larger facilities.

Summary

We project the need for additional RNs through 2014 to be between 2,935 and 3,307. Most of the forecasted demand is due to replacement (e.g., voluntary quits, termination, retirement). A second component, growth-based need, is much smaller, but still substantial and could vary depending upon whether current staffing pattern trends continue forward or are abated through policy changes. Because the projections do not include counts of current or estimated vacancies, the projections most likely underestimate future demand for RN services in Wyoming. Vacancies will be discussed in an upcoming R&P publication. Given that a large cohort of the state's aging population will require additional and more intensive medical services, the ability of the health care and education systems to keep pace seems doubtful if current policies continue.

The effects of an aging population on Wyoming's health care system will not be uniform. Smaller communities will evidence shortfall issues first and the symptoms will be more acute than in larger communities. Policymakers should design mitigating measures to take into account community size as well.

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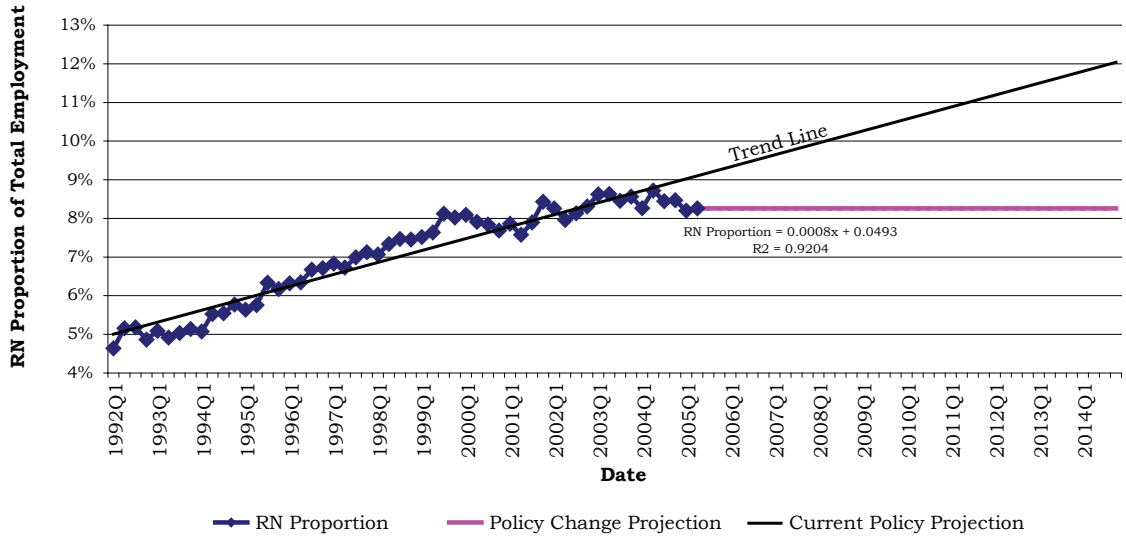
Equation 2.1

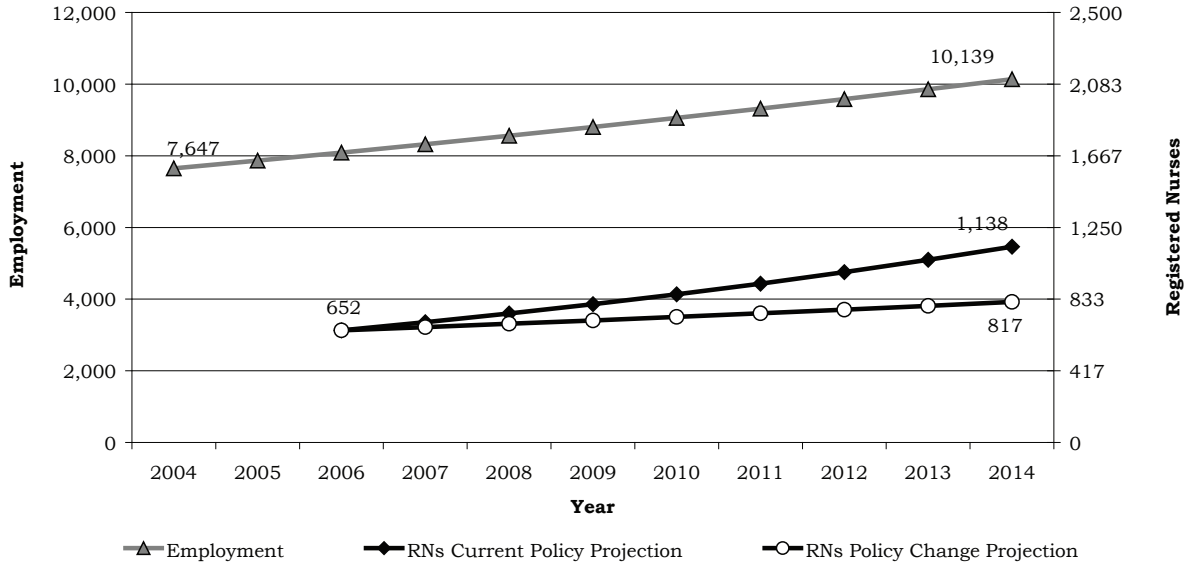
$$\text{Replacement Need}_{2014} = C_{2006} - (C_{2006} * (C_{2014}/C_{2006})).$$

Figure 2.1: Registered Nurses as a Proportion of QCEW[a] Employment in Ambulatory Health Care Services (Excludes Vacancies or Replacement Need)



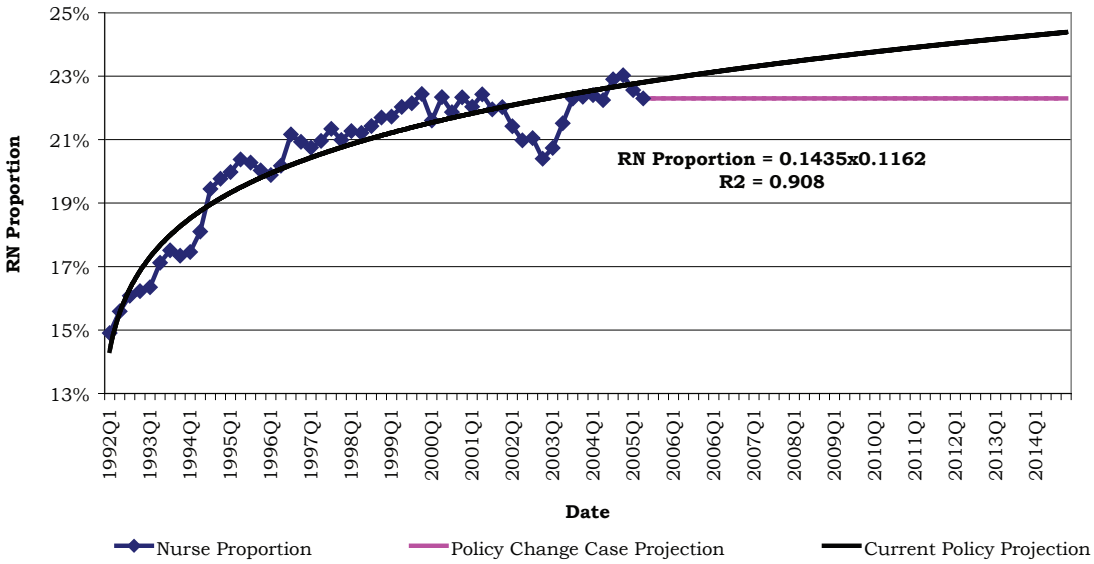
[a]Quarterly Census of Employment & Wages.
Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

Figure 2.2: Projections of Registered Nurses Working in Ambulatory Health Care Services, 2004 - 2014 (Excludes Vacancies or Replacement Need)



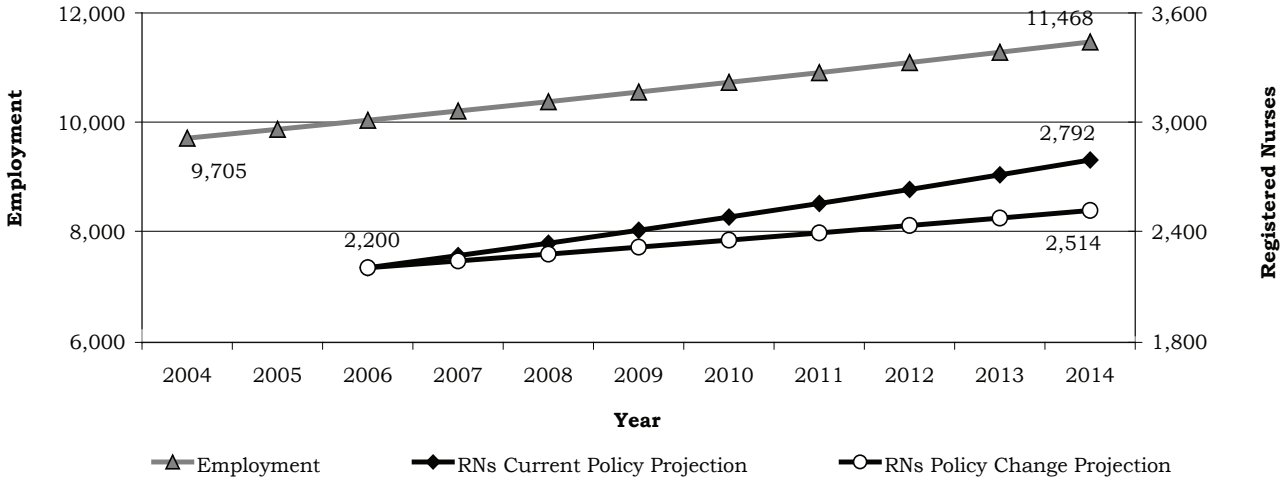
Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

Figure 2.3: Registered Nurses as a Proportion of QCEW[a] Employment in Hospitals (Excludes Vacancies or Replacement Need)



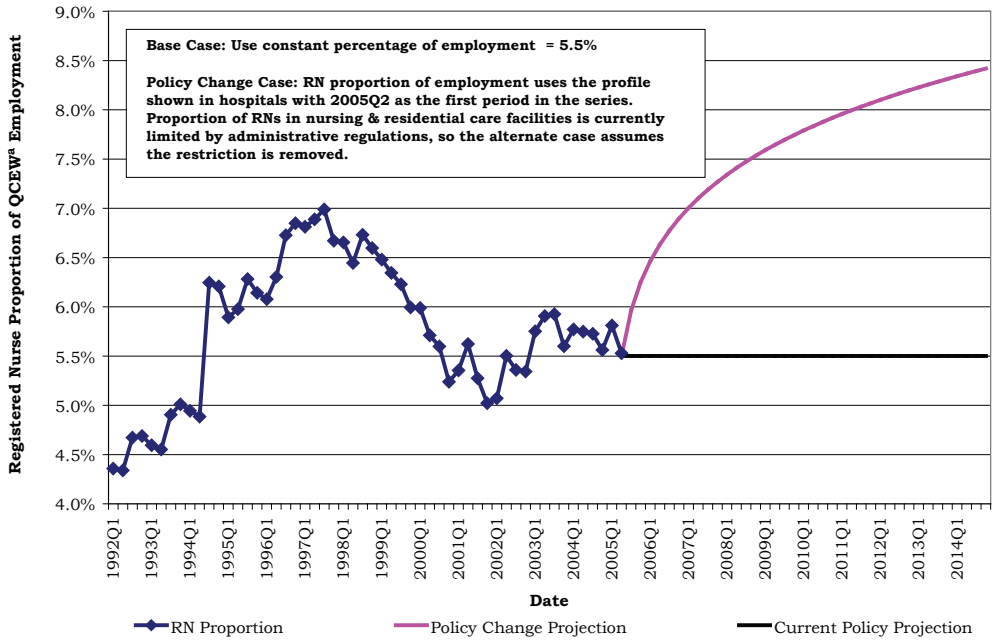
[a]Quarterly Census of Employment & Wages.
Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

Figure 2.4: Projections of Registered Nurses Working in Hospitals, 2004 - 2014 (Excludes Vacancies or Replacement Need)



Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

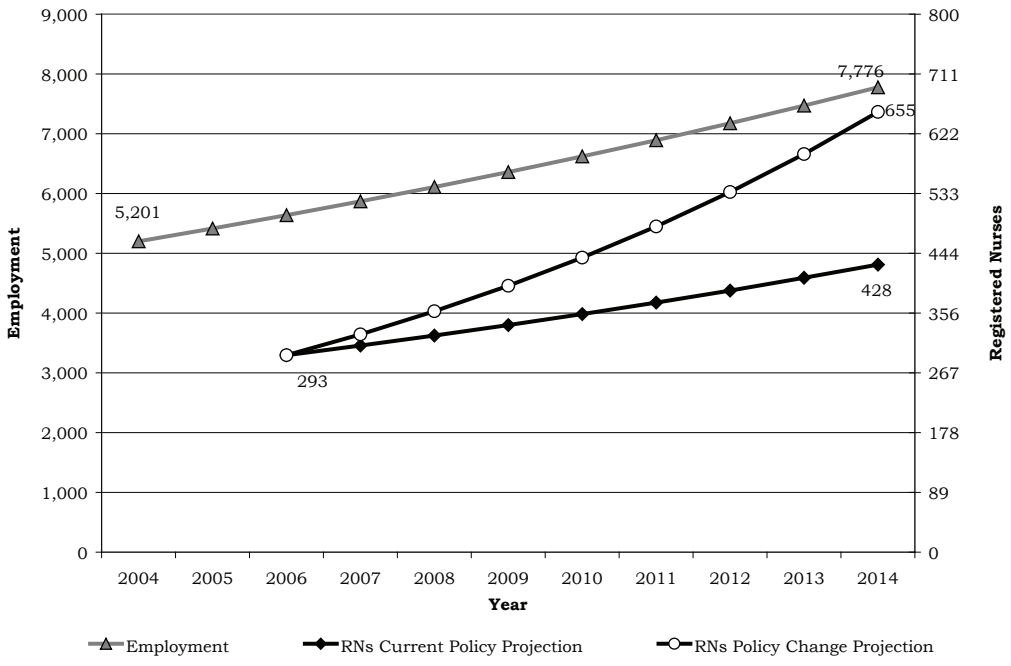
Figure 2.5: Registered Nurses as a Proportion of QCEW[a] Employment in Nursing & Residential Care Facilities (Excludes Vacancies or Replacement Need)



[a]Quarterly Census of Employment and Wages.

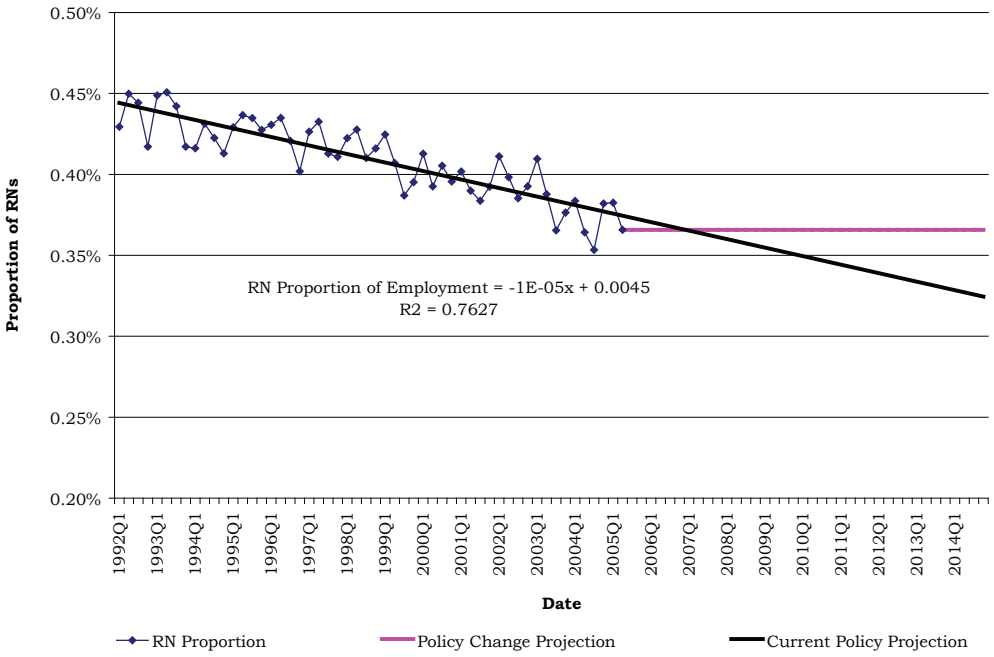
Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

Figure 2.6: Projections of Registered Nurses Working in Nursing & Residential Care Facilities, 2004 - 2014 (Excludes Vacancies or Replacement Need)



Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

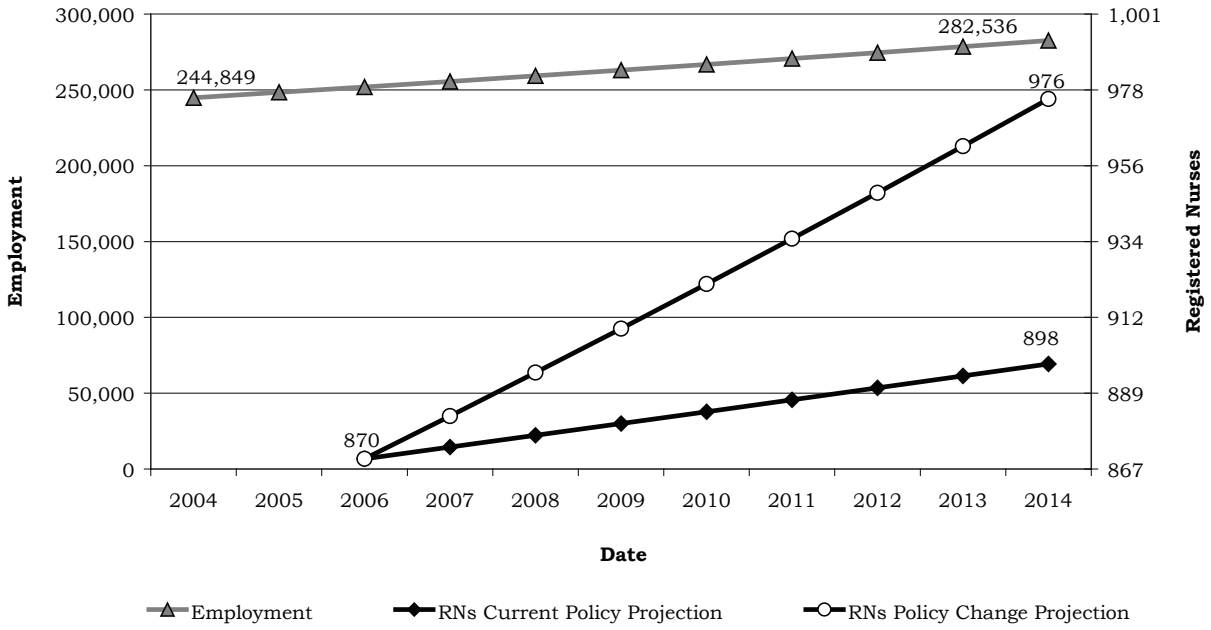
Figure 2.7: Registered Nurses as a Proportion of QCEW[a] Employment, Non-Health Care Industries (Excludes Vacancies or Replacement Need)



[a]Quarterly Census of Employment and Wages.

Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

Figure 2.8: Projections of Registered Nurses Working in Non-Health Care Industries, 2004 - 2014 (Excludes Vacancies or Replacement Need)



Source: RN data from Wyoming State Board of Nursing license files; Employment data from Quarterly Census of Employment and Wages.

Figure 2.9: Current Policy Distribution of Projected Nursing Demand in Health Care, 2006-2014

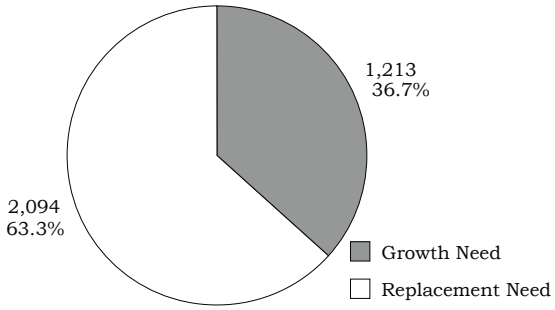


Figure 2.10: Policy Change Distribution of Projected Nursing Demand in Health Care, 2006-2014

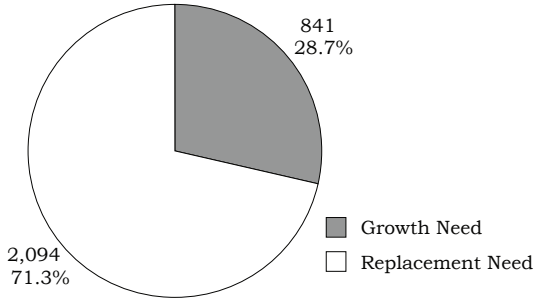


Figure 2.11: Distribution of Continuous Hospital and Nursing & Residential Care Facilities RNs by Age Group and Facility Size, 2006Q2

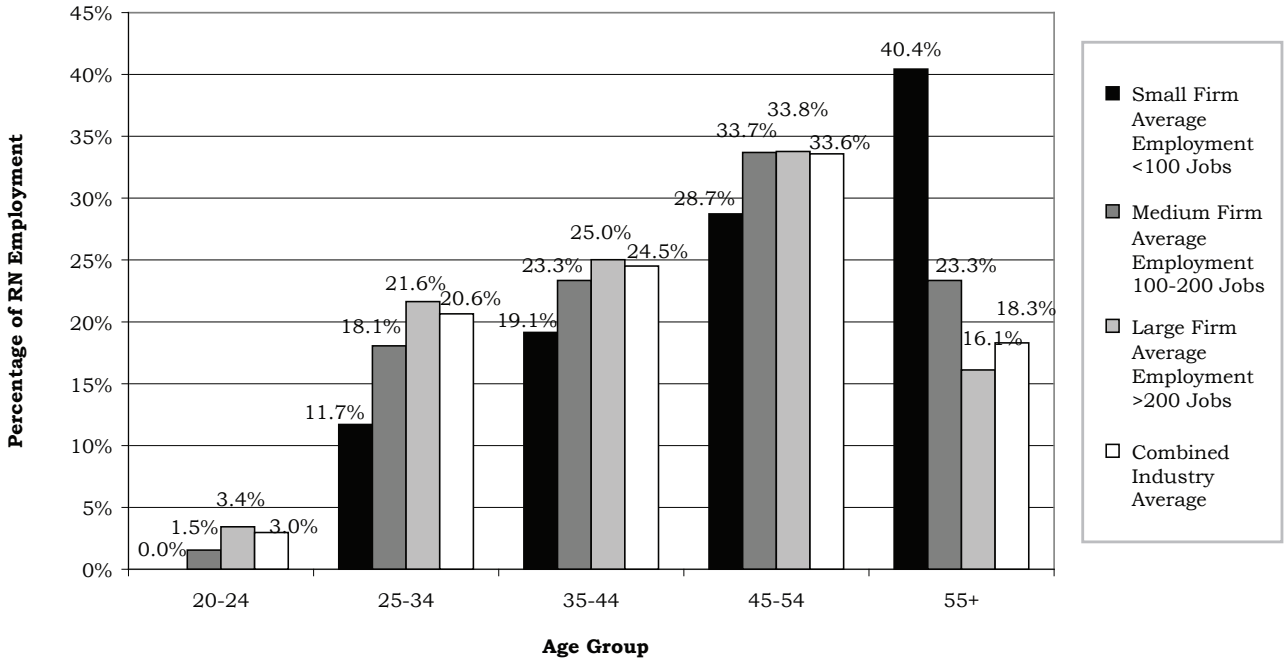


Table 2.1: Current Policy Projections of Wyoming Registered Nurse Demand, 2006 - 2014

Analysis	Ambulatory Health Care Services	Hospitals	Nursing & Residential Care Facilities	Health Care Only	All Other Industries
RNs 2006 (Estimated)	652	2,200	293	3,145	870
RNs 2014 (Projected)	1,138	2,792	428	4,358	898
Projected Growth Need (Base Case)	486	592	135	1,213	28
Projection 2006 Nurses Remaining by 2014	156	833	62	1,051	870
Proportion of 2006 Nurses Remaining by 2014	23.9%	37.9%	21.2%	33.4%	
Projected Replacement Need[a]	496	1,367	231	2,094	
Projected Total Nursing Demand 2006 - 2014	982	1,959	366	3,307	

[a]Replacement need calculation basis was the 2006 estimate of nurses working.

Table 2.2: Policy Change Projections of Wyoming Registered Nurse Demand, 2006 - 2014

Analysis	Ambulatory Health Care Services	Hospitals	Nursing & Residential Care Facilities	Health Care Only	All Other Industries
RNs 2006 (Estimated)	652	2,200	293	3,145	870
RNs 2014 (Projected)	817	2,514	655	3,986	976
Projected Growth Need	165	314	362	841	106
Projection 2006 Nurses Remaining by 2014	156	833	62	1,051	870
Proportion of 2006 Nurses Remaining by 2014	23.9%	37.9%	21.2%	33.4%	
Projected Replacement Need[a]	496	1,367	231	2,094	
Projected Total Nursing Demand 2006 - 2014	661	1,681	593	2,935	

[a]Replacement need calculation basis was the 2006 estimate of nurses working.

Table 2.3: Components of Change by Projection Scenario and Industry, 2006-2014

Analysis	Ambulatory Health Care Services		Hospitals		Nursing & Residential Care Facilities		Total Health Care	
	Current Policy	Policy Change	Current Policy	Policy Change	Current Policy	Policy Change	Current Policy	Policy Change
RNs 2006 (Estimated)	652	652	2,200	2,200	293	293	3,145	3,145
Growth Need	486	165	592	314	135	362	1,213	841
Replacement Need[a]	496	496	1,367	1,367	231	231	2,094	2,094
Projected Total Nursing Demand 2006 - 2014	982	661	1,959	1,681	366	593	3,307	2,935

[a]Replacement need calculation basis was the 2006 estimate of nurses working.

Table 2.4: Continuously Employed Registered Nurses (RNs) Working in Hospitals & Nursing and Residential Care Facilities, 2006Q2

		Facility Size (Average Employment)			
Age Group	Variable	<100 Jobs (58 Firms)	100-200 Jobs (18 Firms)	>200 Jobs (13 Firms)	Total RNs
20-24	RNs	0	7	69	**76**
	Row%	0.0%	9.2%	90.8%	**100.0%**
	Col%	0.0%	1.5%	3.4%	**3.0%**
25-34	RNs	11	82	435	**528**
	Row%	2.1%	15.5%	82.4%	**100.0%**
	Col%	11.7%	18.1%	21.6%	**20.6%**
35-44	RNs	18	106	503	**627**
	Row%	2.9%	16.9%	80.2%	**100.0%**
	Col%	19.1%	23.3%	25.0%	**24.5%**
45-54	RNs	27	153	679	**859**
	Row%	3.1%	17.8%	79.0%	**100.0%**
	Col%	28.7%	33.7%	33.8%	**33.6%**
55+	RNs	38	106	324	**468**
	Row%	8.1%	22.6%	69.2%	**100.0%**
	Col%	40.4%	23.3%	16.1%	**18.3%**
Total	**RNs**	**94**	**454**	**2,010**	**2,558**
	Row%	**3.7%**	**17.7%**	**78.6%**	**100.0%**
	Col%	**100.0%**	**100.0%**	**100.0%**	**100.0%**

A Comparison of Employment and Wages in Health Care in Wyoming 2000 to 2007

by: Carola Cowan, BLS Programs Supervisor

Introduction

Health care is an important part of Wyoming's economy. In first quarter 2007, a total of 23,702 jobs were worked with earnings totaling $235,490,676 and an average weekly wage of $888 (see **Tables 3.1**, **3.2**, and **3.3**). It represented 8.9% of all jobs in the state and 9.3% of all wages. This sector has grown proportionately with the rest of the labor force. In first quarter 2000, Wyoming had only 19,531 jobs in the health care sector earning $140,052,406 and an average weekly wage of $586. Health care employment constituted 8.8% of jobs and 9.7% of wages at that time.

This article profiles employment and wage data in the Wyoming health care sector for first quarter 2000 and first quarter 2007. We will compare the two quarters to see which industries within this sector have grown and at what pace. We will address several questions, including: Have the number of establishments, employees, and wages increased or decreased and at what rate? Is there a connection between those variables and the demographics of Wyoming? What conclusions can we draw from our observations? In sum, how is the work setting within which nurses are employed changing?

Methodology

For this research we used first quarter 2000 and 2007 unemployment insurance files. Each quarter Wyoming employers must file unemployment insurance tax forms with the Department of Employment. The employer reports the number of employees for that quarter and the amount of wages paid to those employees. When the employer applies for an unemployment insurance account, Research & Planning assigns a six-digit industry code (**North American Industry Classification System code**) and a county code to each employer based on their economic activity and the location of their operation. An industry is defined as the type of firm for which a person works; firms that make similar products or offer similar services are grouped together within an industry. For this research project, we used employers that were assigned industry codes within the health care subsectors of ambulatory health care services, hospitals, and nursing & residential care facilities. The average weekly wage was calculated by dividing the total wages by the average number of employees and by dividing that number by 13 for the number of weeks in the quarter. We also distinguished private establishments and public establishments. The only exception is hospitals. For this analysis we changed 15 hospitals from public into private ownership to define them by their common usage in the health care community even though they are legally part of local government.

Findings

Overall, the number of establishments, employees, total wages, and average weekly wages increased from first quarter 2000 to the first quarter 2007.

In first quarter 2000, there were 969 establishments in the health care sector with 19,531 jobs paying total wages of $140 million and an average weekly wage of $586. By first quarter 2007 the number of establishments had increased to 1,160 with

23,702 jobs paying $235 million in total wages and an average weekly wage of $884 (see **Tables 3.1**, **3.2**, **3.3**, and **3.4**). That is a 19.7% increase in establishments and a 21.4% increase in jobs. At the same time total wages increased by 68.1% and average weekly wages rose by 50.9%. In comparison, across all industries there were a total of 20,609 establishments in 2000 providing 220,902 jobs and paying $1.4 billion in wages and an average weekly wage of $588. In 2007 the number of establishments and jobs had increased to 24,093 (16.9%) and 266,599 (20.7%). Wages had risen to $2.5 billion and an average weekly wage of $730, or by 74.7% and 46.0%, respectively.

Overall, the health care sector showed faster growth in all areas except total wages, suggesting that this sector is starting to adjust for the increased demand of the older population (see **Chapter 1**). Establishments, jobs, and average weekly wage grew more quickly (28.0%, 0.7%, and 4.9%, respectively) and total wages grew more slowly (6.6%) in the health care sector than in all industries combined.

Most industries in the private health care sector showed an increase in the number of establishments (see **Table 3.1**). Only the number of family planning centers saw a decrease. Five industries remained stable. At the same time, three industries that increased in number of establishments also showed decreasing employment. This resulted in reduced average employment per establishment (see **Table 3.5**). Six other industries showed decreased average employment at the establishment level. This indicates either the new establishments are purposely smaller in size or employers are having a hard time finding qualified employees to fill open positions.

The largest percentage increase in the number of establishments was seen in continuing care retirement communities (350.0%, or 7), which, as we shall see in the retention publication, substantially affects the work schedule of nurses (see **Table 3.4** and **Figure 3.2**). Other large increases were seen in freestanding ambulatory surgical & emergency centers (220.0%, or 11) and offices of all other miscellaneous health practitioners (208.3% or 25), which includes offices of nurses, physician assistants, herbalists, and acupuncturists. Since the total number of firms in some of these industries is relatively small, large percentage increases are common (see **Figure 3.1**). If we look at the industries with the largest numeric increases, offices of physicians (6.3%, or 21), chiropractors (35.2%, or 19), and physical, occupational, & speech therapists (46.7%, or 21) and miscellaneous health practitioners (208.3%, or 25) stand out.

Increases in the number of establishments have also been seen in industries that serve older populations (see **Table 3.4** and **Figures 3.1** and **3.2**). These include home health care services (4.2%, or 1), nursing care facilities (13.6%, or 3), and continuing care retirement communities (350.0%, or 7). Only the number of homes for the elderly remained stable at 21 establishments though they increased their employment by 33.2% (85). This indicates that increased demand is met by expanding capacity at existing locations rather than by opening new firms. Average employment in nursing care facilities and continuing care retirement communities has decreased by 11.9% and 26.6% respectively (see **Table 3.5**). As mentioned earlier, this may mean the new locations are on a smaller scale or that companies have trouble finding employees. Both of these industries showed a larger than average increase in the average weekly wage of 99.1% ($350 to $697) and 97.3% ($250 to $493) (see **Table 3.3**, **Figure 3.7**). This could partially be due to

companies trying to attract qualified staff by offering higher wages. Regardless, average weekly wages in both industries are still far below the overall average in the health care industry of $887.

The average weekly wage has been going up in all but six industries (see **Table 3.3** and **Figure 3.7**). Freestanding ambulatory surgical & emergency centers, diagnostic imaging centers, and ambulance services are three of the industries with declining average weekly wages, even though these have significantly increased in number of establishments and employment. These three industries provide services typically found in hospitals. Since inflationary pressures usually drive up labor costs and, subsequently average weekly wages, we may assume that some of the employees in higher-paying occupations, such as registered nurses and doctors, have been replaced with lower-paying occupations, such as certified nursing assistants (CNAs) and nurse practitioners. Or, in the case of freestanding ambulatory surgical & emergency centers, diagnostic imaging centers, and ambulance services, competition with hospitals may cause wages or hours worked to decline in order to offer lower costs and stay competitive.

As mentioned earlier, employment per firm has increased for most establishments (see **Table 3.5** and **Figures 3.8** and **3.9**). For example, in the first quarter of 2000 the average employment in offices of physicians was 7 employees and in 2007 it was 9, an increase of 23.3%. Average weekly wages in offices of physicians have also increased by 71.5%, which is well above the average increase in the health care industry (50.9%) (see **Table 3.3** and **Figure 3.7**). This suggests that these establishments hired higher-paid employees, perhaps physicians, indicating that even though the number of establishments increased by 21, the number of physicians has probably increased more by having offices with multiple physicians on staff.

The number of general medical & surgical hospitals remained stable, but employment grew by 13.6% (see **Table 3.4**). This shows that hospitals in Wyoming have expanded to respond to the increased demand of a growing population and, perhaps, more complex technology. At the same time, total wages increased by 67.3% but average weekly wages increased by only 45%, which suggests that the increase in employment is in lower-paying support occupations such as CNAs (see **Tables 3.2** and **3.3**).

The public sector did show less growth than the private sector. There was only a gain of five establishments, of which three were in ambulance services (see **Table 3.4**). Employment in some industries actually declined, though the overall increase in employment in the public sector was 10.1%, less than half of the increase in the private sector (see **Table 3.1**). Average weekly wages increased at approximately the same rate as in the private sector (see **Table 3.3**). The largest employment increase (79.9%) in the public sector was in outpatient mental health & substance abuse centers, which also increased by one establishment. It appears that much of the needed growth in health care has occurred in the private sector and not the public sector.

Conclusion

Overall, we can see that the health care industry has been growing along with the population. Industries that serve an older population have been growing faster than some other industries. A look at wages and number of employees per establishment suggests that staffing patterns may be changing to meet the demand.

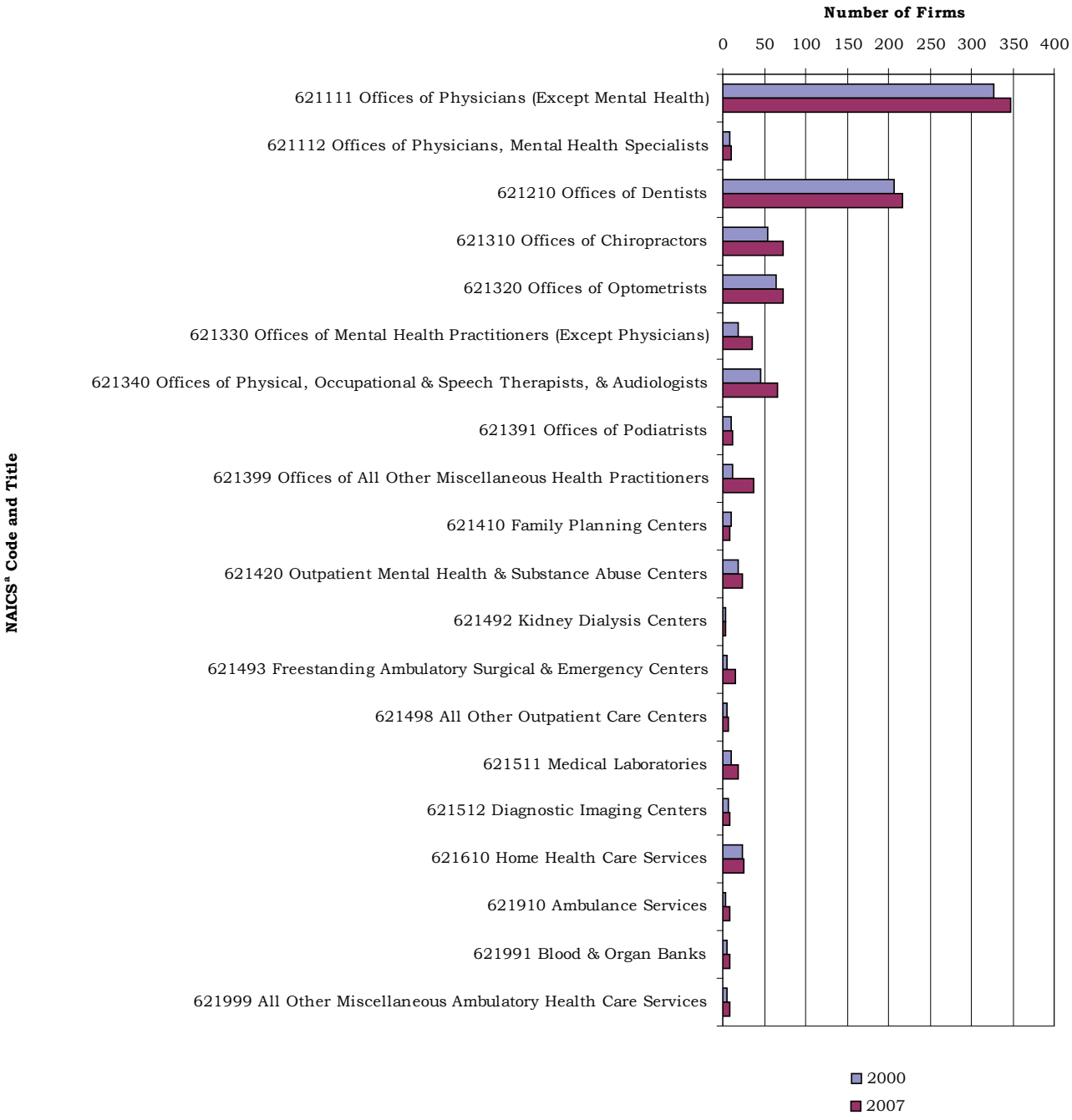
Examples of Coding Heirarchy Within the North American Industry Classification System

Sector (2-Digit)	62	Health Care & Social Assistance
Subsector (3-Digit)	**621**	**Ambulatory Health Care Services**
Group (4-Digit)	6211	Offices of Physicians
Industry (5-Digit)	62111	Offices of Physicians
U.S. Industry (6-Digit)	**621111**	**Offices of Physicians (except Mental Health Specialists)**
U.S. Industry (6-Digit)	**621112**	**Offices of Physicians (Mental Health Specialists)**

Sector (2-Digit)	62	Health Care & Social Assistance
Subsector (3-Digit)	**623**	**Nursing & Residential Care Facilities**
Group (4-Digit)	6233	Community Care for the Elderly
Industry (5-Digit)	62331	Community Care for the Elderly
U.S. Industry (6-Digit)	**623311**	**Continuing Care Retirement Communities**

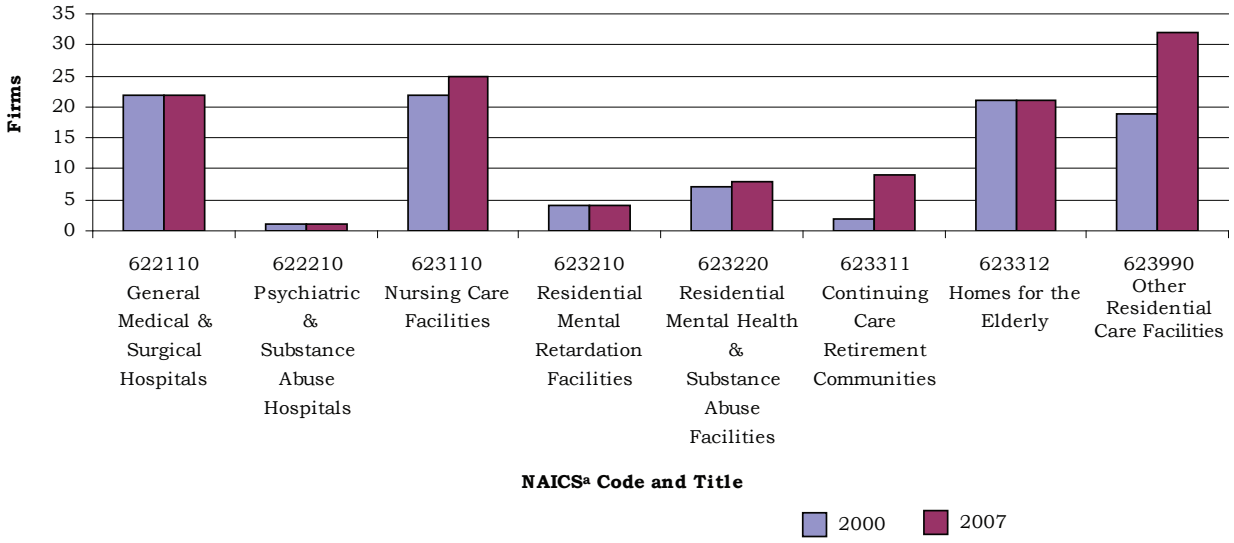
Note: Bold type indicates levels used in this analysis.

Figure 3.1: Number of Private Firms in Ambulatory Health Care Services (NAICS[a] Subsector 621) in Wyoming in 2000 and 2007



[a]North American Industry Classification System.

Figure 3.2: Number of Private Firms in Hospitals and Nursing & Residential Care Facilities (Subsectors 622 and 623) in Wyoming in 2000 and 2007



[a]North American Industry Classification System.

Figure 3.3: Percentage of Employment in Wyoming Private Health Care-Related Firms by North American Industry Classification System Code in 2000

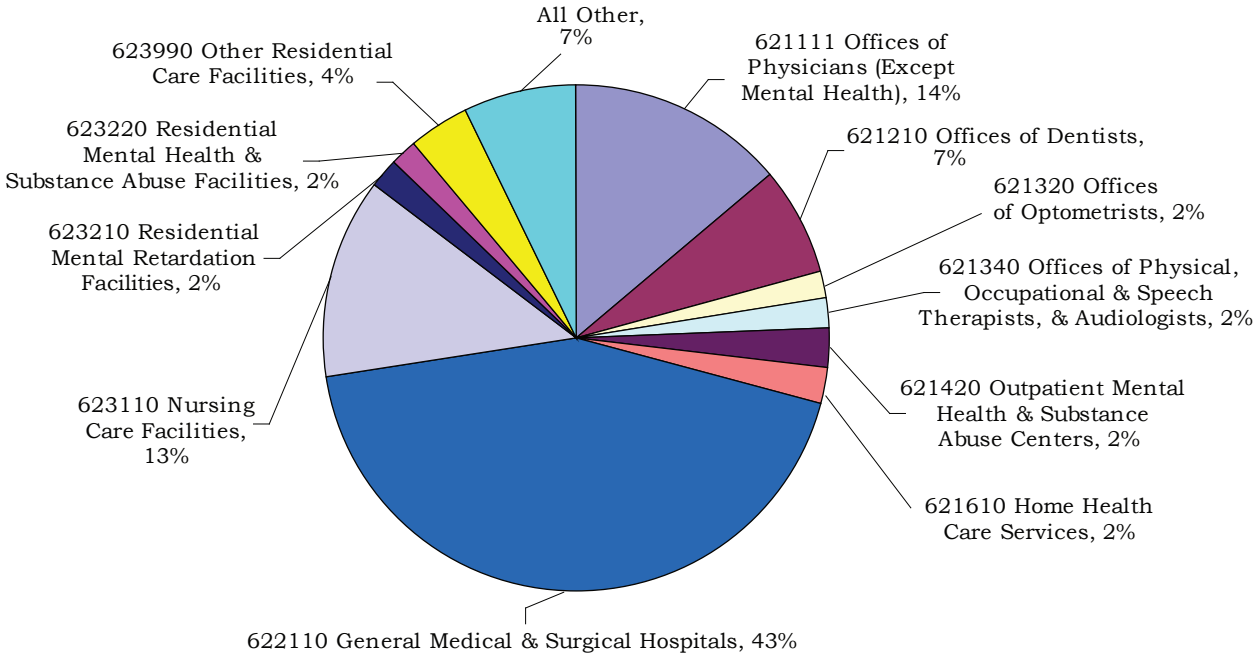


Figure 3.4: Percentage of Private Employment in Wyoming Health Care-Related Firms by North American Industry Classification Code System in 2007

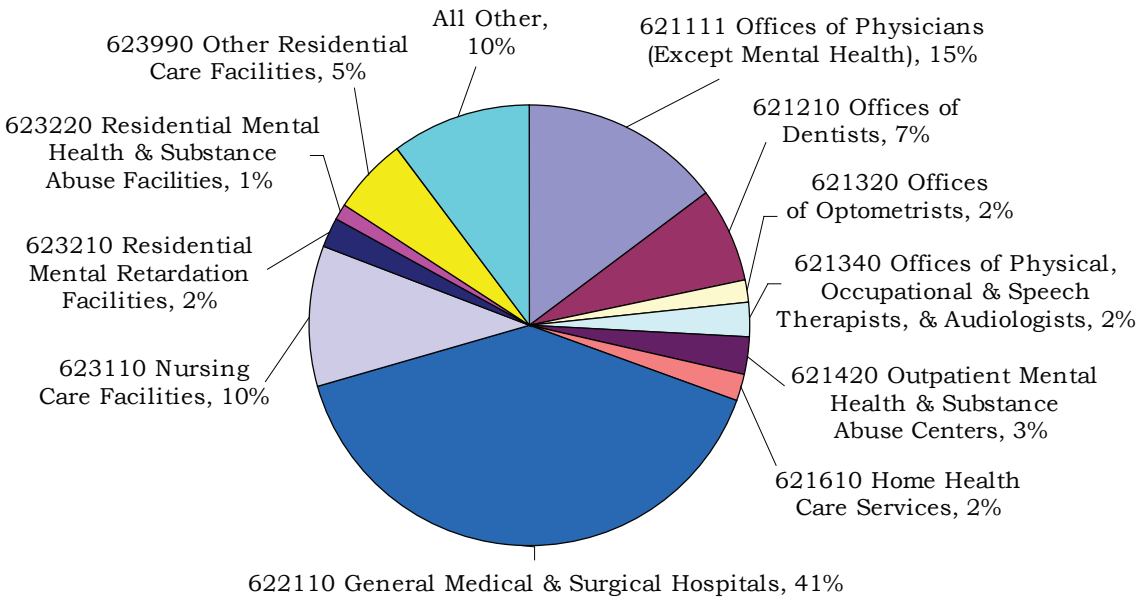


Figure 3.5: Distribution of Wages in Health Care-Related Industries in Wyoming in 2000 by North American Industry Classification System Code and Title

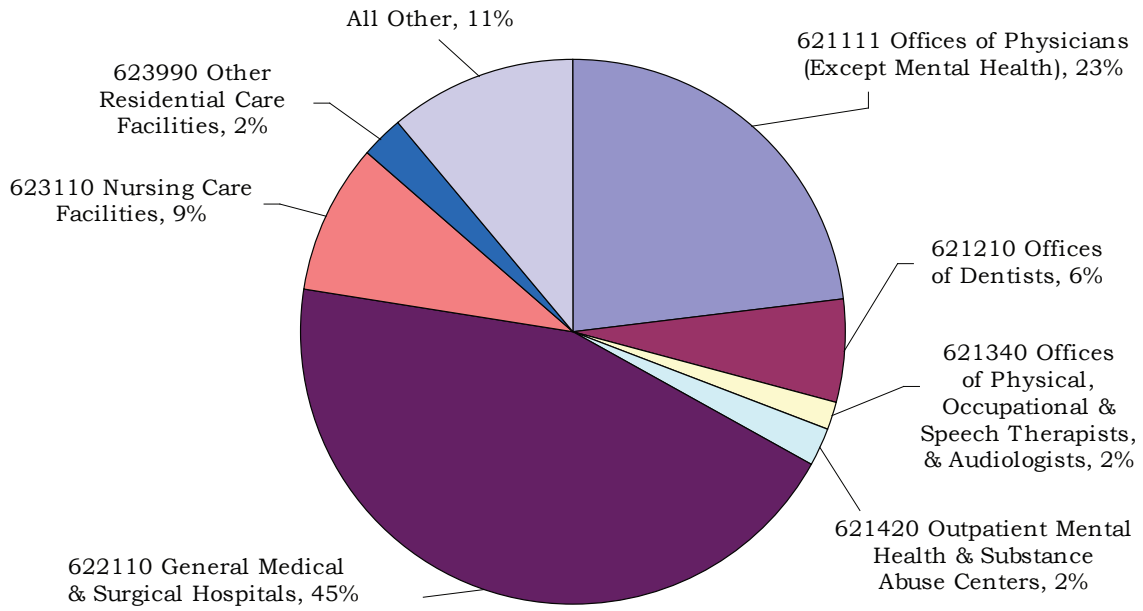


Figure 3.6: Distribution of Wages in Health Care-Related Industries in Wyoming in 2007 by North American Industry Classification System Code and Title

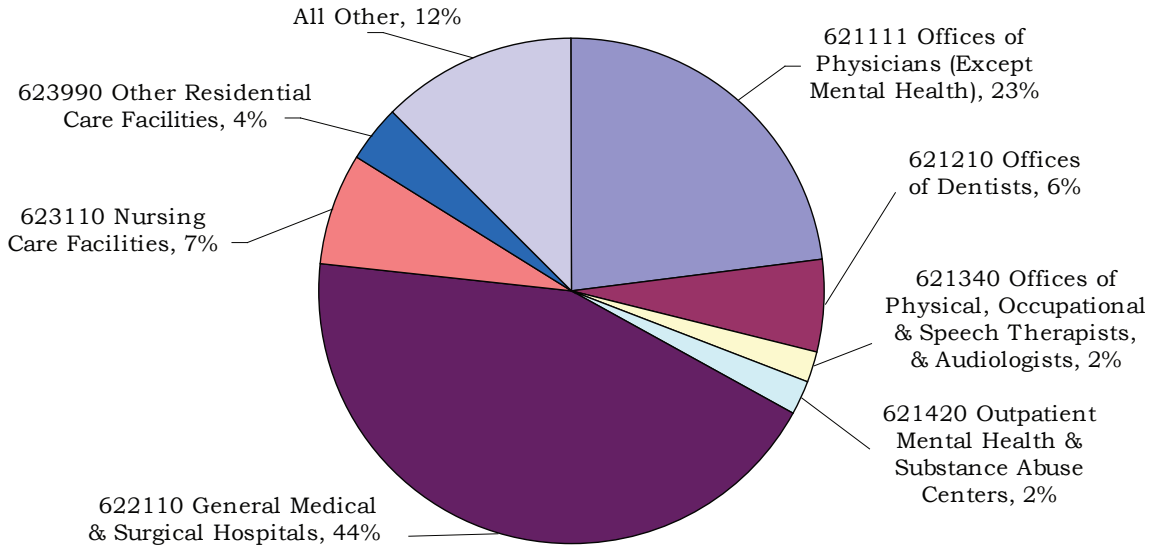
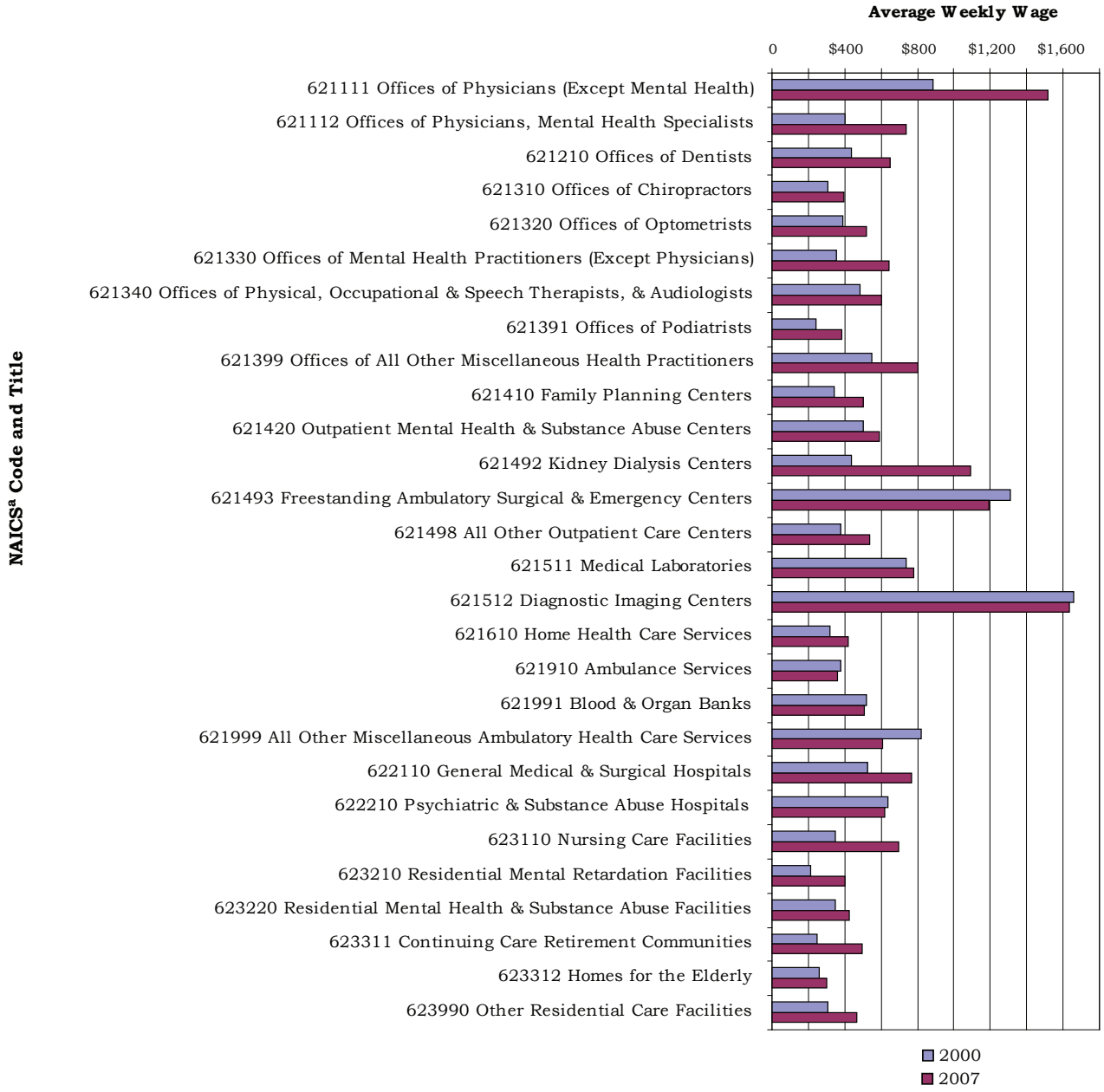
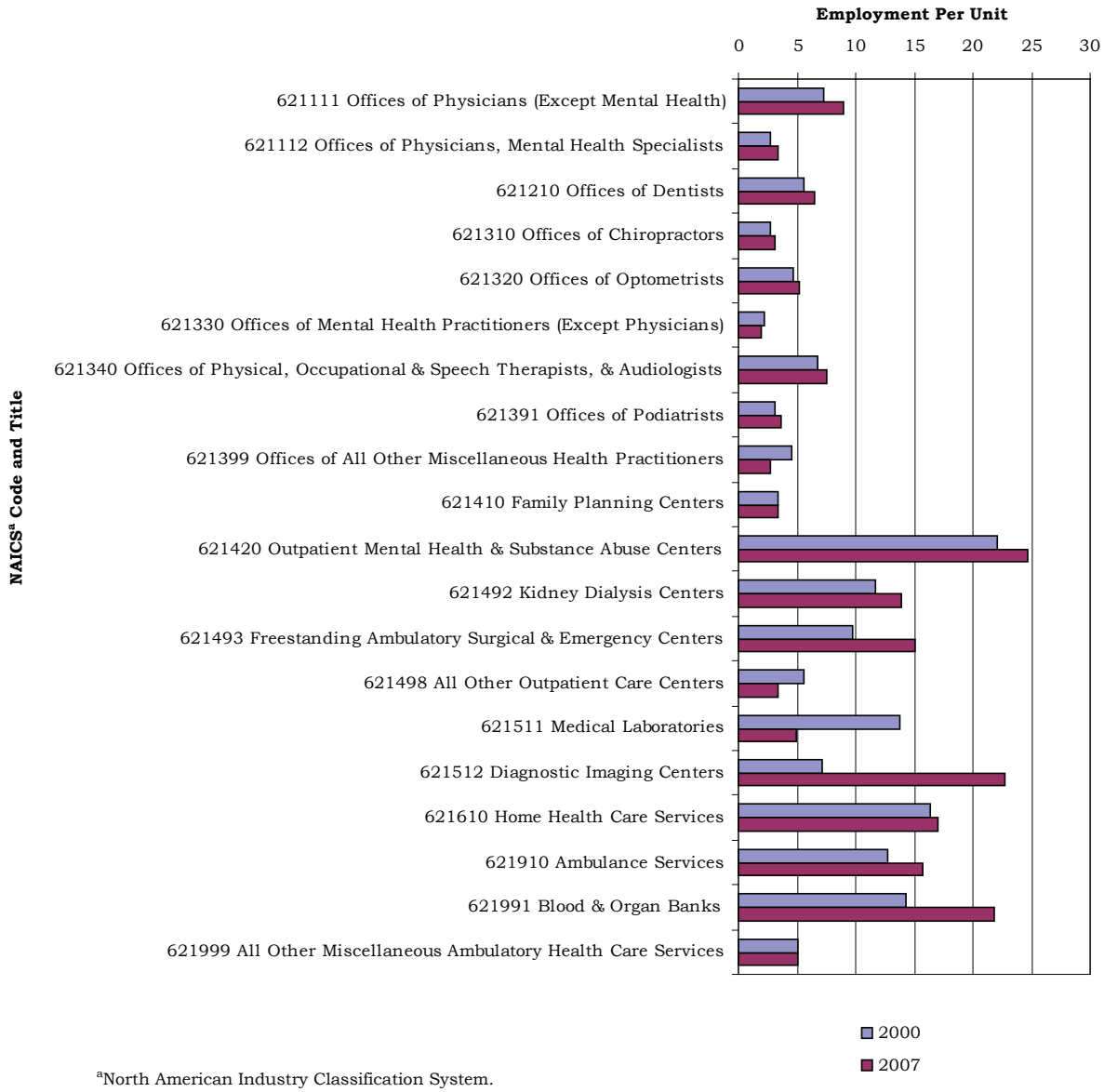


Figure 3.7: Average Weekly Wage by NAICS[a] Code and Title in Private Health Care-Related Firms in Wyoming in 2000 and 2007



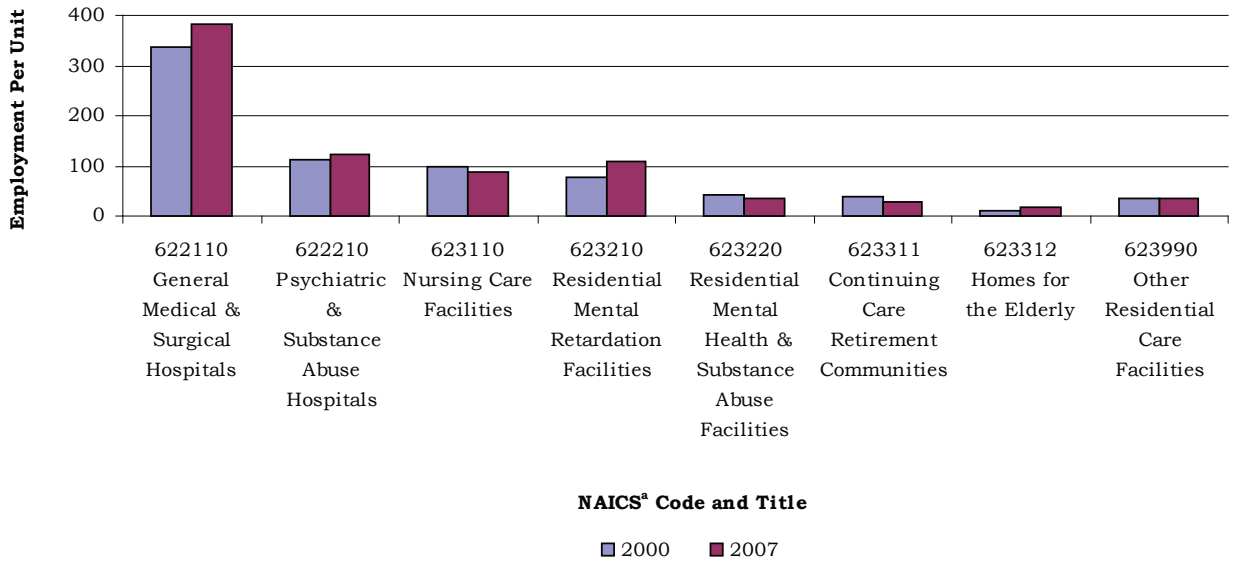
[a]North American Industry Classification System.

Figure 3.8: Employment Per Unit in Private Ambulatory Health Care Services (NAICS[a] Subsector 621) in Wyoming in 2000 and 2007



[a]North American Industry Classification System.

Figure 3.9: Private Employment Per Unit in Wyoming Hospitals & Nursing and Residential Care Facilities (NAICS[a] Subsectors 622 and 623) in 2000 and 2007



[a]North American Industry Classification System.

Table 3.1: Wyoming Health Care Employment and Change in Employment, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	2000 Employment	2000 Percentage of Employment	2007 Employment	2007 Percentage of Employment	% Change
Private					
621 Ambulatory Health Care Services					
621111 Offices of Physicians (Except Mental Health)	2,367	13.9%	3,106	14.8%	31.2%
621112 Offices of Physicians, Mental Health Specialists	24	0.1%	37	0.2%	52.8%
621210 Offices of Dentists	1,169	6.9%	1,408	6.7%	20.4%
621310 Offices of Chiropractors	146	0.9%	225	1.1%	54.5%
621320 Offices of Optometrists	308	1.8%	382	1.8%	23.9%
621330 Offices of Mental Health Practitioners (Except Physicians)	41	0.2%	68	0.3%	64.5%
621340 Offices of Physical, Occupational & Speech Therapists, & Audiologists	303	1.8%	499	2.4%	64.8%
621391 Offices of Podiatrists	34	0.2%	44	0.2%	29.7%
621399 Offices of All Other Misc. Health Practitioners	55	0.3%	100	0.5%	81.2%
621410 Family Planning Centers	34	0.2%	30	0.1%	-12.6%
621420 Outpatient Mental Health & Substance Abuse Centers	421	2.5%	568	2.7%	35.1%
621492 Kidney Dialysis Centers	35	0.2%	42	0.2%	19.1%
621493 Freestanding Ambulatory Surgical & Emergency Centers	49	0.3%	242	1.2%	396.5%
621498 All Other Outpatient Care Centers	28	0.2%	24	0.1%	-14.3%
621511 Medical Laboratories	152	0.9%	93	0.4%	-38.8%
621512 Diagnostic Imaging Centers	50	0.3%	204	1.0%	310.7%
621610 Home Health Care Services	393	2.3%	427	2.0%	8.6%
621910 Ambulance Services	51	0.3%	126	0.6%	147.1%
621991 Blood & Organ Banks	71	0.4%	175	0.8%	145.3%
621999 All Other Miscellaneous Ambulatory Health Care Services	25	0.1%	45	0.2%	77.7%
622 Hospitals					
622110 General Medical & Surgical Hospitals	7,383	43.4%	8,386	40.1%	13.6%
622210 Psychiatric & Substance Abuse Hospitals[a]					
623 Nursing & Residential Care Facilities					
623110 Nursing Care Facilities	2,167	12.7%	2,171	10.4%	0.2%
623210 Residential Mental Retardation Facilities	312	1.8%	431	2.1%	38.2%
623220 Residential Mental Health & Substance Abuse Facilities	288	1.7%	270	1.3%	-6.4%
623311 Continuing Care Retirement Communities[a]					

[a]Not disclosable due to confidentiality of data.

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Table 3.1: Wyoming Health Care Employment and Change in Employment, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	2000 Employment	2000 Percentage of Employment	2007 Employment	2007 Percentage of Employment	% Change
623312 Homes for the Elderly	256	1.5%	341	1.6%	33.2%
623990 Other Residential Care Facilities	667	3.9%	1,117	5.3%	67.5%
Total Private	**17,017**	**100.0%**	**20,935**	**100.0%**	**23.0%**
Government					
621 Ambulatory Health Care Services	**218**	**8.7%**	**276**	**10.0%**	**26.3%**
622 Hospitals	**1,456**	**57.9%**	**1,710**	**61.8%**	**17.5%**
623 Nursing & Residential Care Facilities	**840**	**33.4%**	**781**	**28.2%**	**-6.9%**
Total Government	**2,514**	**100%**	**2,767**	**100%**	**10.1%**
Total	**19,531**	**8.8%**	**23,702**	**8.9%**	**21.4%**
All Industries private & government	**220,902**		**266,599**		**20.7%**

Table 3.2: Wyoming Health Care Wages and Change in Wages, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	2000 Wages	Percentage of Wages	2007 Wages	Percentage of Wages	% Change
Private					
621 Ambulatory Health Care Services					
621111 Offices of Physicians (Except Mental Health)	$27,294,680	23.1%	$46,734,965	23.1%	71.2%
621112 Offices of Physicians, Mental Health Specialists	$138,760	0.1%	$336,192	0.2%	142.3%
621210 Offices of Dentists	$7,078,977	6.0%	$11,503,175	5.7%	62.5%
621310 Offices of Chiropractors	$640,236	0.5%	$1,238,919	0.6%	93.5%
621320 Offices of Optometrists	$1,624,600	1.4%	$2,527,506	1.3%	55.6%
621330 Offices of Mental Health Practitioners (Except Physicians)	$213,480	0.2%	$560,974	0.3%	162.8%
621340 Offices of Physical, Occupational & Speech Therapists, & Audiologists	$2,001,573	1.7%	$3,907,775	1.9%	95.2%
621391 Offices of Podiatrists	$126,513	0.1%	$253,850	0.1%	100.7%
621399 Offices of All Other Miscellaneous Health Practitioners	$374,045	0.3%	$942,628	0.5%	152.0%
621410 Family Planning Centers	$144,743	0.1%	$210,589	0.1%	45.5%
621420 Outpatient Mental Health & Substance Abuse Centers	$2,664,081	2.2%	$4,573,466	2.3%	71.7%
621492 Kidney Dialysis Centers	$221,494	0.2%	$340,410	0.2%	53.7%
621493 Freestanding Ambulatory Surgical & Emergency Centers	$360,460	0.3%	$2,570,869	1.3%	613.2%
621498 All Other Outpatient Care Centers	$169,325	0.1%	$163,923	0.1%	-3.2%
621511 Medical Laboratories	$1,072,782	0.9%	$929,263	0.5%	-13.4%
621512 Diagnostic Imaging Centers	$744,068	0.6%	$2,904,568	1.4%	290.4%
621610 Home Health Care Services	$1,488,559	1.3%	$2,415,098	1.2%	62.2%
621910 Ambulance Services	$260,864	0.2%	$619,610	0.3%	137.5%
621991 Blood & Organ Banks	$369,531	0.3%	$1,117,425	0.6%	202.4%
621999 All Other Miscellaneous Ambulatory Health Care Services	$204,471	0.2%	$274,695	0.1%	34.3%
622 Hospitals					
622110 General Medical & Surgical Hospitals	$52,700,299	44.5%	$88,193,665	43.7%	67.3%
622210 Psychiatric & Substance Abuse Hospitals[a]					

[a]Not disclosable due to confidentiality of data.

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Table 3.2: Wyoming Health Care Wages and Change in Wages, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	2000 Wages	Percentage of Wages	2007 Wages	Percentage of Wages	% Change
623 Nursing & Residential Care Facilities					
623110 Nursing Care Facilities	$10,583,293	8.9%	$14,528,509	7.2%	37.3%
623210 Residential Mental Retardation Facilities	$1,410,493	1.2%	$2,159,801	1.1%	53.1%
623220 Residential Mental Health & Substance Abuse Facilities	$1,676,171	1.4%	$1,795,538	0.9%	7.1%
623311 Continuing Care Retirement Communities[a]					
623312 Homes for the Elderly	$754,578	0.6%	$1,368,921	0.7%	81.4%
623990 Other Residential Care Facilities	$2,921,641	2.5%	$7,383,837	3.7%	152.7%
Total Private	**$118,413,702**	**100.0%**	**$201,882,873**	**100.0%**	**70.5%**
Government					
621 Ambulatory Health Care Services	**$1,635,142**	**7.6%**	**$2,598,247**	**7.7%**	**58.9%**
622 Hospitals	**$15,188,257**	**70.2%**	**$24,845,536**	**73.9%**	**63.6%**
623 Nursing & Residential Care Facilities	**$4,815,305**	**22.3%**	**$6,164,020**	**18.3%**	**28.0%**
Total Government	**$21,638,704**	**100%**	**$33,607,803**	**100%**	**55.3%**
Total	**$140,052,406**	**9.7%**	**$235,490,676**	**9.3%**	**68.1%**
All Industries private & government	**$1,447,478,725**		**$2,528,871,913**		**74.7%**

[a]Nondisclosable due to confidentiality of data.

Table 3.3: Wyoming Health Care Average Weekly Wage and Change, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	Average Weekly Wage 2000	2007	% Change
Private			
621 Ambulatory Health Care Services			
621111 Offices of Physicians (Except Mental Health)	$885	$1,518	71.5%
621112 Offices of Physicians, Mental Health Specialists	$402	$739	83.7%
621210 Offices of Dentists	$436	$651	49.3%
621310 Offices of Chiropractors	$304	$398	30.7%
621320 Offices of Optometrists	$392	$517	31.7%
621330 Offices of Mental Health Practitioners (Except Physicians)	$356	$640	79.7%
621340 Offices of Physical, Occupational & Speech Therapists, & Audiologists	$482	$600	24.5%
621391 Offices of Podiatrists	$242	$384	58.9%
621399 Offices of All Other Miscellaneous Health Practioners	$550	$803	45.9%
621410 Family Planning Centers	$343	$504	46.8%
621420 Outpatient Mental Health & Substance Abuse Centers	$504	$588	16.8%
621492 Kidney Dialysis Centers	$436	$1,094	150.8%
621493 Freestanding Ambulatory Surgical & Emergency Centers	$1,309	$1,191	-9.0%
621498 All Other Outpatient Care Centers	$375	$535	42.7%
621511 Medical Laboratories	$738	$779	5.6%
621512 Diagnostic Imaging Centers	$1,656	$1,634	-1.3%
621610 Home Health Care Services	$319	$422	32.4%
621910 Ambulance Services	$376	$358	-4.7%
621991 Blood & Organ Banks	$519	$505	-2.7%
621999 All Other Miscellaneous Ambulatory Health Care Services	$818	$609	-25.5%
622 Hospitals			
622110 General Medical & Surgical Hospitals	$528	$766	45.0%
622210 Psychiatric & Substance Abuse Hospitals[a]			
623 Nursing & Residential Care Facilities			
623110 Nursing Care Facilities	$350	$697	99.1%
623210 Residential Mental Retardation Facilities	$214	$399	86.2%
623220 Residential Mental Health & Substance Abuse Facilities	$345	$424	22.8%
623311 Continuing Care Retirement Communities[a]			
623312 Homes for the Elderly	$259	$298	14.9%
623990 Other Residential Care Facilities	$309	$464	50.3%
Total Private	**$588**	**$887**	**50.9%**
Government			
621 Ambulatory Health Care Services	**$576**	**$725**	**25.9%**
622 Hospitals	**$803**	**$1,118**	**39.2%**
623 Nursing & Residential Care Facilities	**$441**	**$607**	**37.6%**
Total Government	**$488**	**$737**	**51.0%**
Total	**$586**	**$884**	**50.9%**
All Industries private & government	**$500**	**$730**	**46.0%**

[a]Nondisclosable due to confidentiality of data.

Table 3.4: Wyoming Health Care Establishments and Change in Establishments, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	Number of Establishments 2000	2007	Change %	n
Private				
621 Ambulatory Health Care Services				
621111 Offices of Physicians (Except Mental Health)	327	348	6.4%	21
621112 Offices of Physicians, Mental Health Specialists	9	11	22.2%	2
621210 Offices of Dentists	207	217	4.8%	10
621310 Offices of Chiropractors	54	73	35.2%	19
621320 Offices of Optometrists	65	73	12.3%	8
621330 Offices of Mental Health Practitioners (Except Physicians)	19	36	89.5%	17
621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	45	66	46.7%	21
621391 Offices of Podiatrists	11	12	9.1%	1
621399 Offices of All Other Miscellaneous Health Practitioners	12	37	208.3%	25
621410 Family Planning Centers	10	9	-10.0%	-1
621420 Outpatient Mental Health & Substance Abuse Centers	19	23	21.1%	4
621492 Kidney Dialysis Centers	3	3	0.0%	0
621493 Freestanding Ambulatory Surgical & Emergency Centers	5	16	220.0%	11
621498 All Other Outpatient Care Centers	5	7	40.0%	2
621511 Medical Laboratories	11	19	72.7%	8
621512 Diagnostic Imaging Centers	7	9	28.6%	2
621610 Home Health Care Services	24	25	4.2%	1
621910 Ambulance Services	4	8	100.0%	4
621991 Blood & Organ Banks	5	8	60.0%	3
621999 All Other Miscellaneous Ambulatory Health Care Services	5	9	80.0%	4
622 Hospitals				
622110 General Medical & Surgical Hospitals	22	22	0.0%	0
622210 Psychiatric & Substance Abuse Hospitals	1	1	0.0%	0
623 Nursing & Residential Care Facilities				
623110 Nursing Care Facilities	22	25	13.6%	3
623210 Residential Mental Retardation Facilities	4	4	0.0%	0
623220 Residential Mental Health & Substance Abuse Facilities	7	8	14.3%	1
623311 Continuing Care Retirement Communities	2	9	350.0%	7
623312 Homes for the Elderly	21	21	0.0%	0
623990 Other Residential Care Facilities	19	32	68.4%	13
Total Private	**945**	**1,131**	**19.7%**	**186**
Government				
621 Ambulatory Health Care Services	**9**	**13**	44.4%	4
621111 Offices of Physicians (Except Mental Health)	4	4	0.0%	0
621420 Outpatient Mental Health & Substance Abuse Centers	4	5	25.0%	1

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Table 3.4: Wyoming Health Care Establishments and Change in Establishments, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	Number of Establishments 2000	2007	Change %	n
621511 Medical Laboratories	1	1	0.0%	0
621910 Ambulance Services	0	3	–	3
622 Hospitals	**5**	**6**	20.0%	1
622110 General Medical & Surgical Hospitals	3	4	33.3%	1
622210 Psychiatric & Substance Abuse Hospitals	2	2	0.0%	0
623 Nursing & Residential Care Facilities	**10**	**10**	0.0%	0
623110 Nursing Care Facilities	3	3	0.0%	0
623210 Residential Mental Retardation Facilities	1	1	0.0%	0
623220 Residential Mental Health & Substance Abuse Facilities	4	4	0.0%	0
623311 Continuing Care Retirement Communities	2	2	0.0%	0
Total Government	**24**	**29**	**20.8%**	**5**
Total	**969**	**1,160**	**19.7%**	**191**
All Industries private & government	**20,609**	**24,093**	**16.9%**	**3,484**

Table 3.5: Wyoming Health Care Employment Per Establishment and Change, First Quarter 2000 and First Quarter 2007

North American Industry Classification System Code and Title	Employment per Establishment 2000	2007	% Change
Private			
621 Ambulatory Health Care Services			
621111 Offices of Physicians (except Mental Health)	7	9	23.3%
621112 Offices of Physicians, Mental Health Specialists	3	3	25.0%
621210 Offices of Dentists	6	6	14.9%
621310 Offices of Chiropractors	3	3	14.3%
621320 Offices of Optometrists	5	5	10.3%
621330 Offices of Mental Health Practitioners (except Physicians)	2	2	-13.2%
621340 Offices of Physical, Occupational & Speech Therapists, & Audiologists	7	8	12.4%
621391 Offices of Podiatrists	3	4	18.9%
621399 Offices of All Other Miscellaneous Health Practitioners	5	3	-41.2%
621410 Family Planning Centers	3	3	-2.9%
621420 Outpatient Mental Health & Substance Abuse Centers	22	25	11.6%
621492 Kidney Dialysis Centers	12	14	19.1%
621493 Freestanding Ambulatory Surgical & Emergency Centers	10	15	55.2%
621498 All Other Outpatient Care Centers	6	3	-38.8%
621511 Medical Laboratories	14	5	-64.6%
621512 Diagnostic Imaging Centers	7	23	219.4%
621610 Home Health Care Services	16	17	4.2%
621910 Ambulance Services	13	16	23.5%
621991 Blood & Organ Banks	14	22	53.3%
621999 All Other Miscellaneous Ambulatory Health Care Services	5	5	-1.3%
622 Hospitals			
622110 General Medical & Surgical Hospitals	336	381	13.6%
622210 Psychiatric & Substance Abuse Hospitals[a]			
623 Nursing & Residential Care Facilities			
623110 Nursing Care Facilities	99	87	-11.9%
623210 Residential Mental Retardation Facilities	78	108	38.2%
623220 Residential Mental Health & Substance Abuse Facilities	41	34	-18.1%
623311 Continuing Care Retirement Communities[a]			
623312 Homes for the Elderly	12	16	33.2%
623990 Other Residential Care Facilities	35	35	-0.6%
Total Private	18	19	2.8%
Government			
621 Ambulatory Health Care Services	**24**	**21**	**-12.6%**
622 Hospitals	**291**	**285**	**-2.1%**
623 Nursing & Residential Care Facilities	**84**	**78**	**-6.9%**
Total Government	**105**	**95**	**-8.9%**
Total	**20**	**20**	**1.4%**
All Industries Private & Government	**11**	**11**	**0.0%**

[a]Nondisclosable due to confidentiality of data.

Hospital Admissions and Discharges by Age Group, Major Diagnostic Code, Hospital Unit, and Patient Length of Stay

by: Lisa Knapp, Research Analyst

As noted in previous chapters, the population of the United States is aging rapidly. In terms of health, elderly patients require different medical care than younger patients. Because Wyoming's population is aging faster than those in many other states, research regarding the type of ailments experienced by the elderly and associated care is becoming increasingly more important. The changes will not only affect the number of nurses needed in the state, but also the skills these nurses will need to have.

Older generations are more likely to suffer from chronic illnesses than younger generations (Bennett & Flaherty-Robb, 2003). A chronic illness is referred to as an ailment that recurs over time and cannot be fully cured (National Academy on an Aging Society, 1999). Examples of common chronic illness include hypertension, heart disease, and arthritis (Kovner, Mezey, & Harrington, 2002).

Older people often suffer from multiple chronic conditions (National Academy on an Aging Society, 1999). These conditions can be difficult to treat, often require hospitalization, and can be expensive. Unfortunately, there are not enough registered nurses (RNs) or other medical personnel who are trained to care for the elderly. It is estimated that only 1% of RNs in the U.S. are geriatrics certified. Additionally, only 4% of RN baccalaureate programs offer significant training in geriatric care (Kovner, Mezey, & Harrington, 2002).

Previous chapters discussed the changing structure of the health care delivery system. This, too, will have an effect on the care that elderly patients receive. Specifically, analysis shows that private sector firms in Wyoming such as doctor's offices and outpatient surgery centers grew rapidly between 2000 and 2007, but public entities such as hospitals saw very little growth (see **Chapter 3**). The growth in outpatient facilities will benefit many patients, but the elderly, a growing population in Wyoming, are more likely than younger patients to be hospitalized for their illnesses and injuries.

Changing demographics in Wyoming will likely increase pressure on existing hospital resources. The types of illnesses and injuries experienced by the elderly will affect the services that hospitals offer and the training and skills that nurses need. This chapter examines the relationship between age demographics and the structure of inpatient diagnostic codes and associated hospital ward data, patient length of stay, and nurse skills among Wyoming hospitals.

Data and Methodology

The data used for this analysis were collected from hospital billing forms by a private company called Solucient. Research & Planning (R&P) received the files for fiscal years 1990 through 2004 from the Wyoming Department of Health and received the files for fiscal years 2005 and 2006 from the Wyoming Hospital Association. These files include the hospital name, patient age, admission and discharge dates, and diagnoses. These data elements can be used to determine common types of diagnoses by age group, county, the hospital wards that see the most patients each year, and the

average length of stay. The average length of stay can be compared to a predetermined Medicare length of stay as a proxy measurement for patient acuity (how sick patients are).

The hospital data sets include information for inpatients (patients who were admitted to stay in the hospital for any length of time). Each patient was assigned a unique identification number upon admission. The admission number was based on the admission and not the patient. Because of this, it is not possible to track patient transfers from one hospital to another or multiple admissions of the same patient.

For this analysis, two data sets were used. Data for fiscal year (FY) 2003 (July 1, 2002 – June 30, 2003) did not contain observations for Johnson County Memorial Hospital, Niobrara Health and Life Center, or Star Valley Medical Center. The data set for FY2006 (July 1, 2005 – June 30, 2006) was missing data for more than half of the nine hospitals during the second part of the fiscal year. To remain consistent, only data between July 1, 2005 and December 31, 2005 were used. Additionally, five hospitals did not submit any data for FY2006. Missing hospitals included Converse County Memorial Hospital, Niobrara Health and Life Center, South Lincoln Memorial Hospital, Star Valley Medical Center, and Johnson County Memorial Hospital. There were no data for Sublette County in either data set because Sublette County does not have a hospital.

This analysis used two years of data because the 2006 data set was incomplete, even though it was the most recent year for which data were available. A comparison of the FY2006 file to the complete data set from FY2003 showed that the proportions of patients in each category varied little between the two years, justifying use of the more recent data for the analysis.

In order to observe age group differences, patient records were divided into three age categories: under age 55, age 55-74, and age 75 and older (Neugarten, 1974). Very little difference was observed, however, in the reasons that the 55- to 74-year-old patients and the 75-and-older patients were hospitalized and the amount of time they spent in hospitals. Consequently the two oldest age groups were combined into a 55-years-and-older category. **Figure 4.1** shows that residents in Wyoming who were age 55 or older made up approximately one-quarter of the total population in 2006 (23.7%). However, as **Figure 4.2** shows, they accounted for nearly half of all inpatient records that year (42.2%). The proportion of Wyoming residents age 55 and older is projected to increase over time to 30.6% of the population, as shown in **Figure 4.3**. As a result, both the proportion and number of patients who need specialized care will increase.

We used two types of data from the hospital billing form, major diagnostic category and service line, to analyze how patients in each age group experience illness and hospital care. Major diagnostic categories (MDCs) are created by dividing the diagnoses found in the International Classification of Diseases, Ninth Edition (ICD-9) into 25 groups (World Health Organization, 1977). These groups are generally based on an organ system in the body, such as the cardiac or respiratory system, but may also be categorized by a major body function or injury such as pregnancy or burns (United States Department of Health and Human Services, 2007). Service line, which will be referred to as care unit or ward for the purposes of this paper, refers to the unit where medical care

is given. Examples include cardiac care, respiratory care, and trauma.

The data contain both an admission date and discharge date. Included in the files was a field for a nationally defined average expected length of stay for each diagnosis. The average length of stay is determined by the United States Department of Health and Human Services as a calculation of the yearly total number of days spent in the hospital for a specific diagnostic group divided by the number of patients discharged from the hospital for that diagnostic group (Centers for Disease Control, n.d.). Each patient's actual days in the hospital were subtracted from the average length of stay for patient's primary diagnostic group to create a measure of patient acuity. If the actual days were less than the average length of stay, then the patient was considered less ill than average. If the actual days were greater than the average length of stay, then the patient was considered to be more ill than average. If the actual days and the average length of stay were equal, then the patient's diagnosis was considered average for that diagnostic group.

Analysis

The two most common MDCs for inpatients under age 55 in both FY 2003 and FY 2006 (see **Figures 4.4** and **4.5**) involved childbirth and newborn care. Combined, these groups made up 43.4% of all inpatient stays for this age group in 2003 and 43.5% in 2006. This is to be expected since this age group contains young children and women of reproductive age who are more apt to be admitted to the hospital.

As patients age, the reasons for hospital admission change. **Figures 4.6** and **4.7** show the 10 most common MDCs for patients age 55 and older. In both fiscal years, almost a quarter of patients in this age group were admitted for diseases of the circulatory system (22.8% in 2003, 22.4% in 2006) followed by diseases of the respiratory system (16.0% in 2003, 13.8% in 2006) and of the musculoskeletal system (15.5% in 2003, 17.6% in 2006). These diagnostic categories include heart disease, pneumonia, and arthritis, all of which are more common in older age groups than in younger age groups.

Another way to compare patient admissions for the two age groups is by analyzing the hospital units to which they were admitted. **Figures 4.8** and **4.9** show the 10 most common hospital units for patients under 55 in 2003 and 2006. As with the MDCs, the two most common hospitalization units for this age group were obstetrics and newborns. These two units composed almost half of all hospitalizations for this group in each year (43.4% and 43.5%, respectively).

Patients age 55 or older in 2003 and 2006 (see **Figures 4.10** and **4.11**) were most frequently admitted to the general medicine unit (23.6% in 2003, 23.8% in 2006), while the second and third most common care units for this age group were cardiac care (20.9% in both 2003 and 2006) and respiratory care (14.6% in 2003, 12.4% in 2006). Again, these older patients were more likely to be hospitalized for chronic illnesses such as heart disease and emphysema than were younger patients, who were more likely to be hospitalized for reasons related to childbirth.

The reasons for admission among inpatients influence the type of training nurses need in order to best serve those admitted for care. **Figures 4.4** to **4.11** show that older populations experience many different ailments than their younger counterparts. Further, as **Chapter 1** illustrates, the populations of Wyoming and the United States are aging rapidly. In 2007, R&P conducted a survey of registered

nurses (RNs) and licensed practical nurses (LPNs) who were working in Wyoming during fourth quarter 2006 (2006Q4). The second question on the survey form asked, "Which of the following best describes the title of your *primary* nursing job?" Possible responses to this question included direct patient care, management, and education. Nurses who chose "direct patient care" were asked to identify in which type of unit they worked. **Figure 4.12** shows the top 10 units direct patient care nurses worked in during the week of July 12, 2007 (excluding long-term care and home health nurses).

As discussed earlier (see **Figure 4.7**), in 2006 patients who were 55 or older were most likely to be admitted to the hospital for diseases of the circulatory system, musculoskeletal system, and respiratory system. Admissions by ward (see **Figure 4.11**) showed these patients were most likely to be admitted to the general medicine (23.8%), cardiac (20.9%), respiratory (12.4%), and orthopedic (11.5%) units for care. Meanwhile, surveyed nurses (see **Figure 4.12**) worked in general medicine (17.9%), general surgery (15.5%), obstetrics and neonatal (14.8%), and the emergency room (11.9%). Only 4.3% of the nurses worked specifically in cardiac care; the proportion of nurses working in respiratory care or orthopedics was not large enough to make the top 10.

The unit in which a nurse works may not be the same as where that nurse has been trained to work. **Figure 4.12** shows how the staffing patterns of Wyoming hospitals differ from the type of care units to which older residents are admitted (see **Figures 4.10** and **4.11**). The responses to this survey question, if used as a measurement of nurse skills, suggest a mismatch exists between where nurses work and where they be may needed to work in the future.

Table 4.1 shows the distribution of hospital employment for the nation and Wyoming in 2005, according to the Occupational Employment Statistics (OES) program (see related article, **"About OES"**). During 2005, a greater proportion of hospital staff were employed as RNs and LPNs in the U.S. (27.2% and 3.6%, respectively) than in Wyoming (23.0% and 2.4%, respectively). In contrast, the percentage of certified nurse aides (CNAs) in Wyoming hospitals was nearly twice that of the U.S. (14.1%, compared to 7.7%). A similar pattern for Wyoming and South Dakota in 2005 is shown in **Table 4.2**. Although the percentage of employees working as LPNs was similar in South Dakota and Wyoming (2.6% and 2.4%, respectively), South Dakota had a higher proportion of RNs (27.4%) than Wyoming (23.0%). Additionally, Wyoming had a higher percentage of CNAs (19.2%) than South Dakota (15.4%; see similar **comparisons to Montana and North Dakota**).

Wyoming has a smaller percentage of nursing staff and a greater percentage of nursing aide staff than the U.S. or surrounding states. Some of the difference may be due to a nationwide nursing shortage that may lead to difficulty recruiting and retaining qualified nurses in Wyoming. The large proportion of certified nurse aides, however, may indicate an institutionalized pattern of reliance on this type of staff rather than more educated nurse staff.

Length of Stay

The difference between actual and expected length of stay was used as an indicator of illness severity across age groups. For the purposes of this analysis, it is assumed that a patient who stays in the hospital longer than expected is more ill than one who stays for a shorter amount

of time than expected. As shown in **Figures 4.13** through **4.16**, in both 2003 and 2006 the percentage of patients who had longer than expected hospital stays increased with age. During 2006 less than one-fifth of inpatient stays were longer than expected for those younger than age 55 (18.5%) while 31.8% of patients who were 55 or older had longer than expected stays.

Because some counties in Wyoming have significantly older populations than other counties, a comparison of length of stay by county is useful. **Figures 4.17** and **4.18** show the population distribution for both age groups by county for 2006 and projected to 2020. The counties are ordered by the number of inpatients seen in their hospitals. Five counties (Converse, Lincoln, Sublette, Johnson, and Niobrara) did not provide data and are listed at the ends of the figures. The projections show many counties in Wyoming are aging rapidly, particularly counties with smaller populations and that typically have smaller hospital systems. For example, the percentage of the population of residents in Hot Springs County who were 55 or older in 2006 was 37.0%. That percentage is projected to increase to 43.7% in 2020. The projections indicate that by 2020, one-third or more of the population of 14 of Wyoming's 23 counties will be 55 years old or older.

Figure 4.19 shows the distribution of the difference in length of stay between hospital admission and discharge for patients who were younger than 55 in 2006 (for 2003 figures, see **Appendix**). A majority of these patients had a difference in length of stay that was equal to or shorter than expected. At four hospitals (Big Horn Memorial Hospital, Memorial Hospital of Sheridan County, Lander Valley Health Center, and Cheyenne Regional Health Center), 20% or more of the patients had a length of stay that was longer than expected.

In comparison, **Figure 4.20** shows the distribution of the difference in length of stay for patients age 55 and older. In 2006 there were 11 hospitals in which at least 20% of the patients had a longer-than-expected length of stay, almost double that of the younger age group. It should also be noted that while only two of the small hospitals had a comparatively large proportion of longer-than-expected stays (Washakie Medical Center, 38.7% and Memorial Hospital of Sheridan County, 24.0%), the state's largest hospitals had a much greater proportion of longer-than-expected stays (Wyoming Medical Center, 35.6%, and Cheyenne Regional Medical Center, 52.4%). Larger hospitals may be more likely to offer a greater variety of medical services and have access to newer technology. If so, patients who are severely ill likely would be sent to these larger hospitals to take advantage of the resources that are less likely to be available in smaller hospitals. As a result, the percentage of longer-than-average stays may be higher in larger hospitals than in smaller facilities.

Additionally, counties with a greater percentage of older residents also tend to have a greater percentage of hospital patients with longer-than-expected lengths of stay. For instance, in Uinta County the percentage of residents age 55 or older was 17.0% and the percentage of longer-than-expected stays at Evanston Regional Hospital was 5.8%. In Goshen County, however, the percentage of people age 55 or older was 31.5% and the proportion of longer-than-expected stays at the Community Hospital of Torrington was 20.4%. Natrona and Laramie counties are excluded from this analysis because, as previously discussed, larger hospitals such as Wyoming Medical Center and Cheyenne Regional Medical Center offer more services and technology and therefore draw patients who are more severely ill.

If older populations tend to be ill more often and require more medical care and longer stays in the hospital, **Figure 4.18** should alert those counties that are projected to have the largest percentage of older residents. In the next several years the need for hospital care will increase with the aging population, and the types of services needed will likely change.

Conclusions

The pattern of hospitalization for patients age 55 and older is dramatically different than that for patients younger than 55. Younger patients more often need care that is geared toward reproductive health and childhood illnesses, while older generations need specialized care for illnesses that are often long term and affect most of the organ systems. Older patients also spend a greater amount of time in the hospital when compared to younger individuals.

Future Research

There are several options for future research. First, future hospital discharge data sets should contain a unique identifying number for each patient rather than for each admission. This would allow researchers to track the number of times a patient is admitted to the hospital during a period and track patients who are sent to other hospitals. This would allow identification of dual admissions and changes in diagnoses, both of which would clarify the data. It also would better depict the informal referral networks among care providers.

Second, the current data sets only contain information for inpatients, or patients who are admitted to stay in the hospital for any length of time. Hospitals also care for outpatients, but without an accounting of these records R&P has no way to determine if there are differences in the way young and old patients utilize these services compared to inpatient services. Similarly, as mentioned in **Chapter 3**, private ambulatory services such as outpatient surgery centers and specialty clinics are becoming more prevalent in the state, but no available data sets currently contain information about the people who use these services. The lack of access to this type of data prohibits us from using real life experiences to model policy changes that could affect health care delivery in Wyoming.

Finally, it is not clear how an aging population and changing pattern of health care needs will affect the health care delivery system in Wyoming. It appears that more nurses and other medical providers will need to be trained, or retrained, in the type of care that is most often needed by older patients. According to R&P's research, a majority of Wyoming nurses work in general medicine and surgery, and not as many work in specializations relevant to the needs of older persons, such as cardiology, pulmonary, and neurology. Although where a nurse works and what a nurse's training is may not match, there appears to be a growing need to train more nurses to work in these specialized units. Additional research is needed to precisely determine the dimensions of these skills gaps.

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About OES

The Occupational Employment Statistics (OES) program is a state-federal cooperative program that collects information on wages and staffing patterns by using surveys and estimation techniques. This program is operated by Research & Planning and counterparts in other states and is supervised by the United States Bureau of Labor Statistics. *Source: U.S. Bureau of Labor Statistics*

Figure 4.1: Wyoming Age Distribution by Age Group, 2006

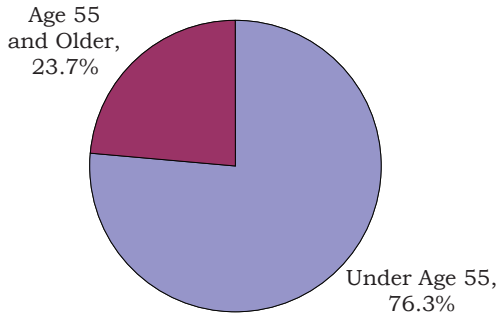


Figure 4.2: Distribution of Inpatient Admissions by Age Group, July 1, 2005 - December 31, 2005

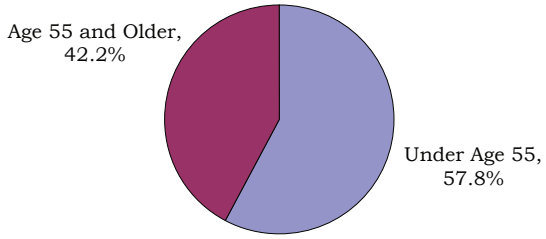


Figure 4.3: Wyoming Age Distribution by Age Group, 2020 (Projected)

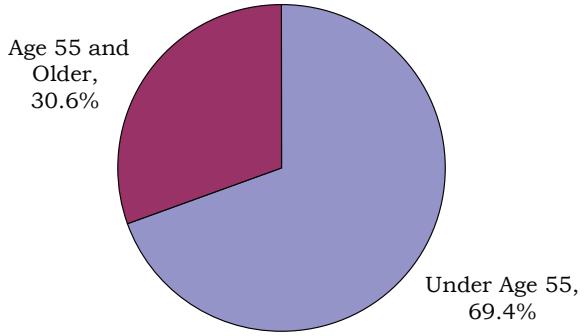
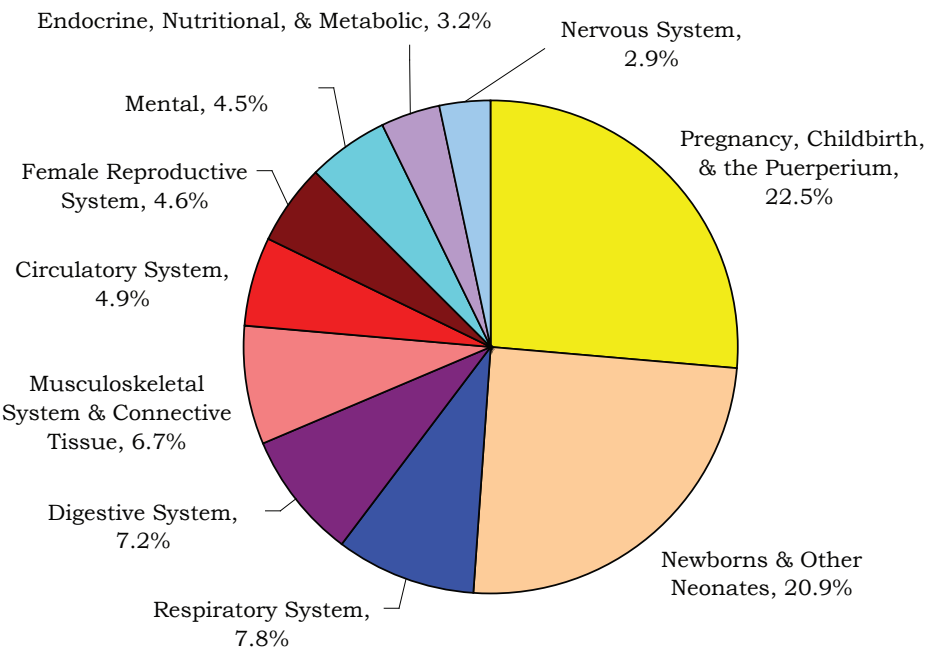
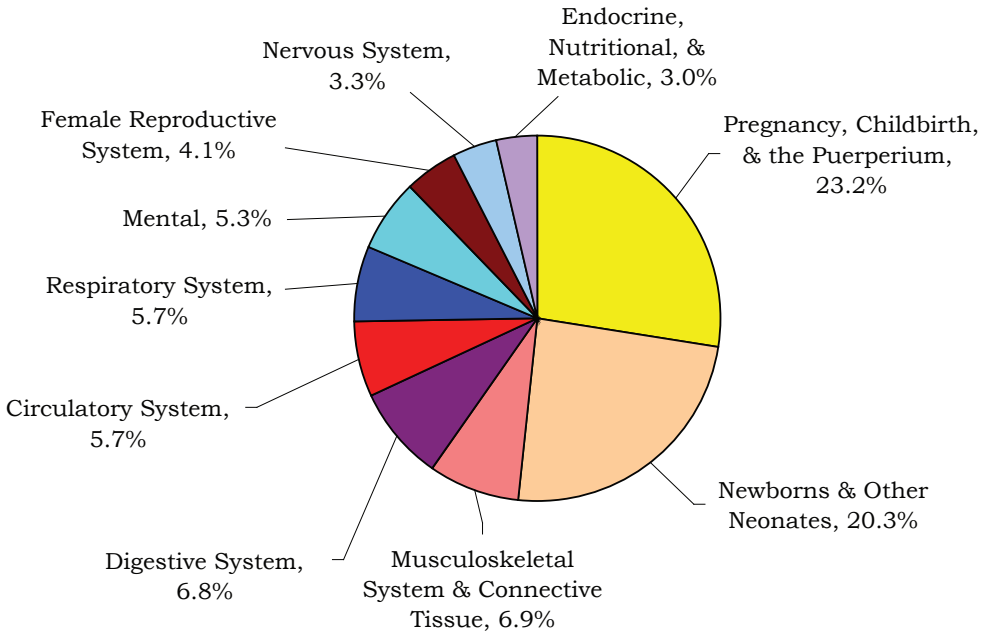


Figure 4.4: Top 10 Major Diagnostic Codes, Under Age 55, Fiscal Year 2003



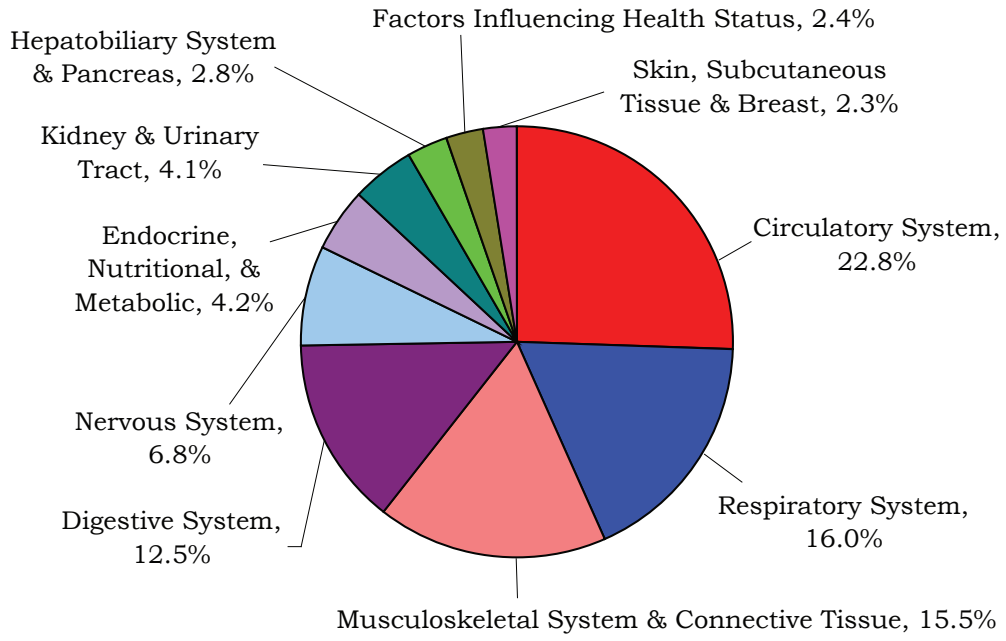
Note: Numbers do not add to 100.0% because only the top 10 major diagnostic codes are shown.

Figure 4.5: Top 10 Major Diagnostic Codes, Under Age 55, July 1, 2005 - December 31, 2005



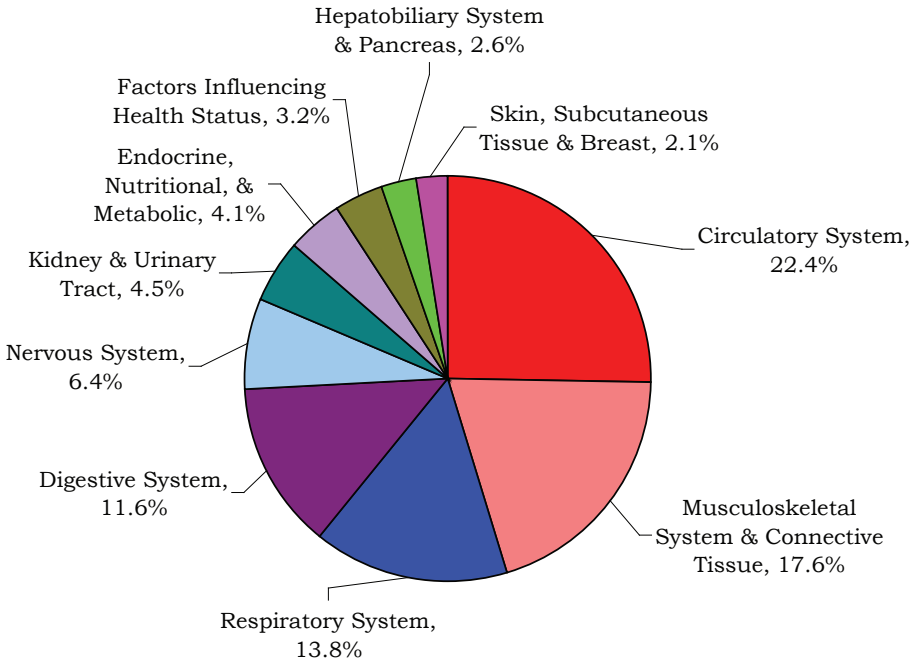
Note: Numbers do not add to 100.0% because only the top 10 major diagnostic codes are shown.

Figure 4.6: Top 10 Major Diagnostic Codes, Age 55 and Older, Fiscal Year 2003



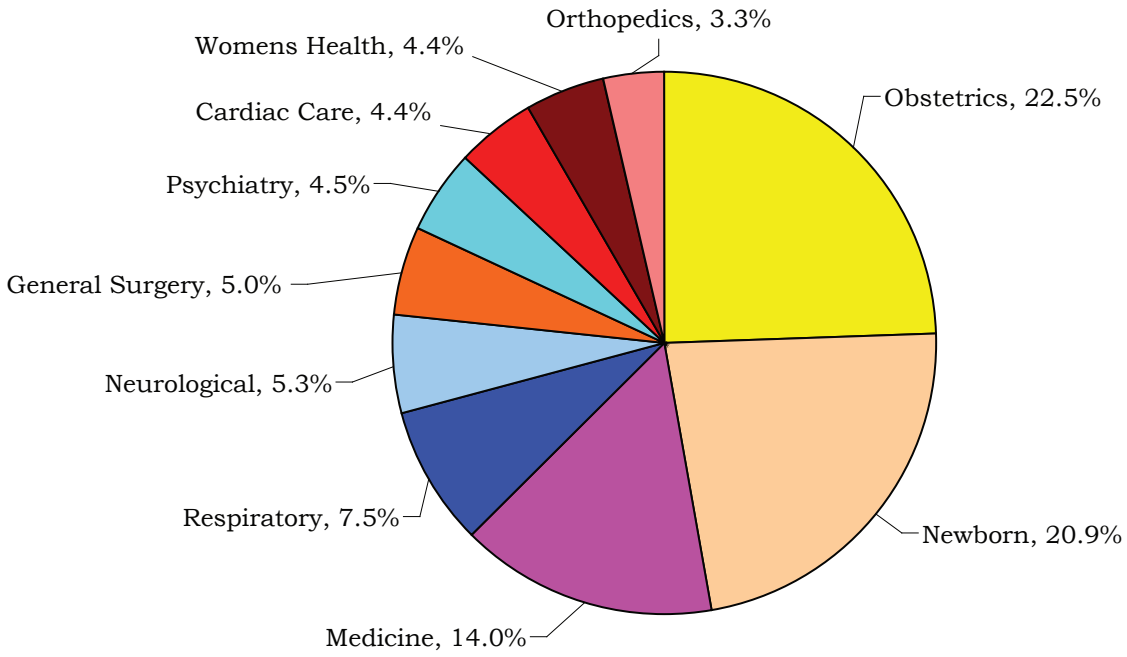
Note: Numbers do not add to 100.0% because only the top 10 major diagnostic codes are shown.

Figure 4.7: Top 10 Major Diagnostic Codes, Age 55 and Older, July 1, 2005 - December 31, 2005



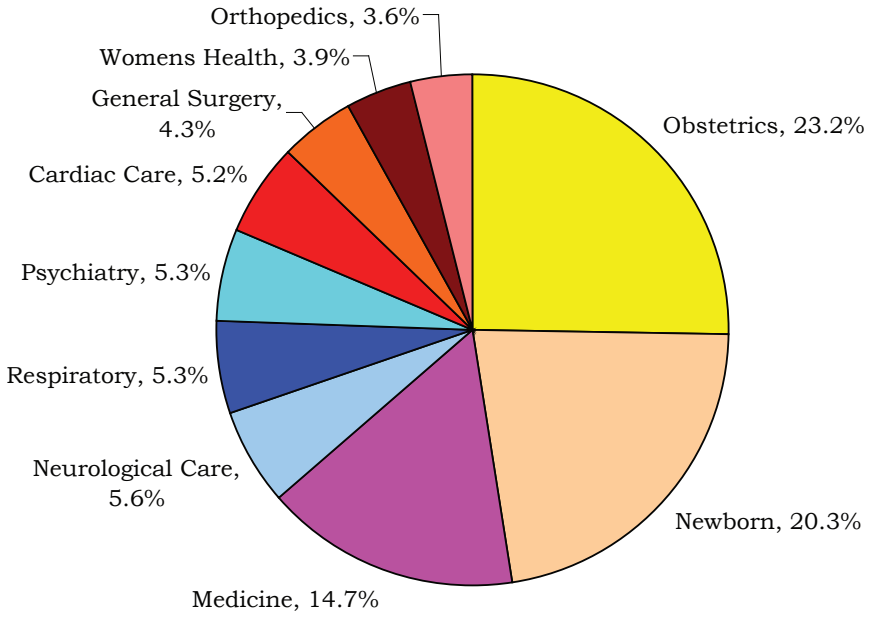
Note: Numbers do not add to 100.0% because only the top 10 major diagnostic codes are shown.

Figure 4.8: Top 10 Hospital Wards, Under Age 55, Fiscal Year 2003



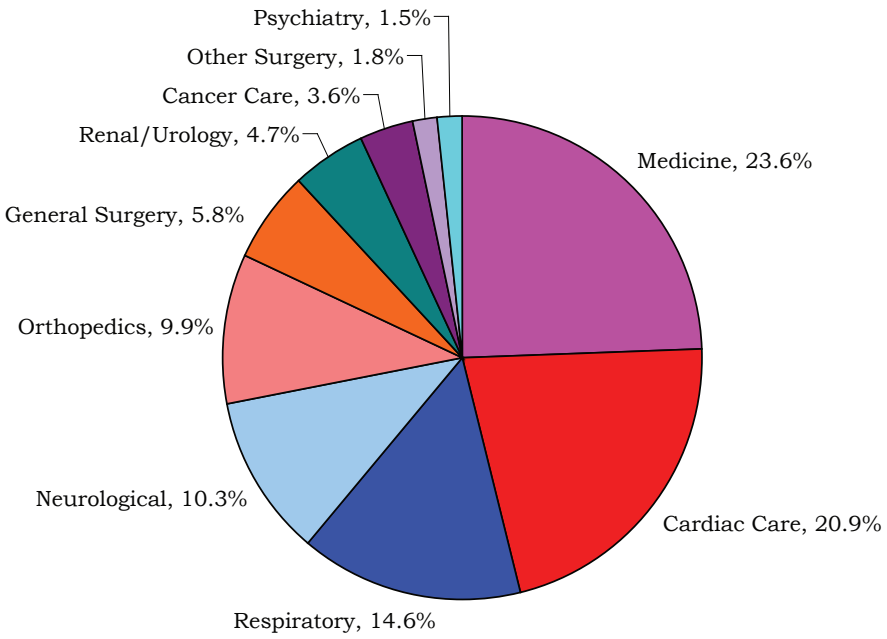
Note: Numbers do not add to 100.0% because only the top 10 hospital wards are shown.

Figure 4.9: Top 10 Hospital Wards, Under Age 55, July 1, 2005 - December 31, 2005



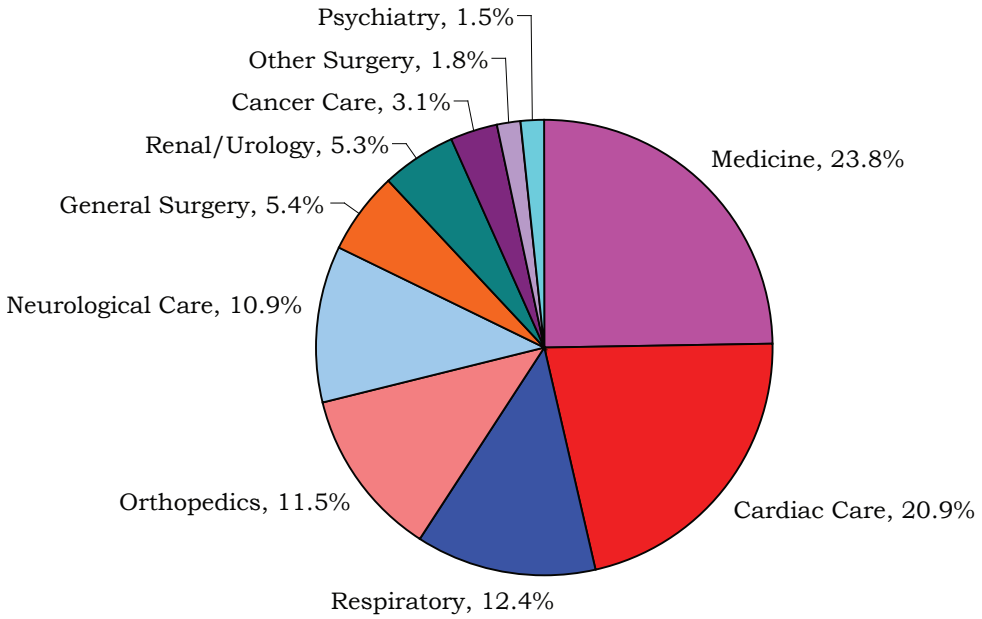
Note: Numbers do not add to 100.0% because only the top 10 hospital wards are shown.

Figure 4.10: Top 10 Hospital Wards, Age 55 and Older, Fiscal Year 2003



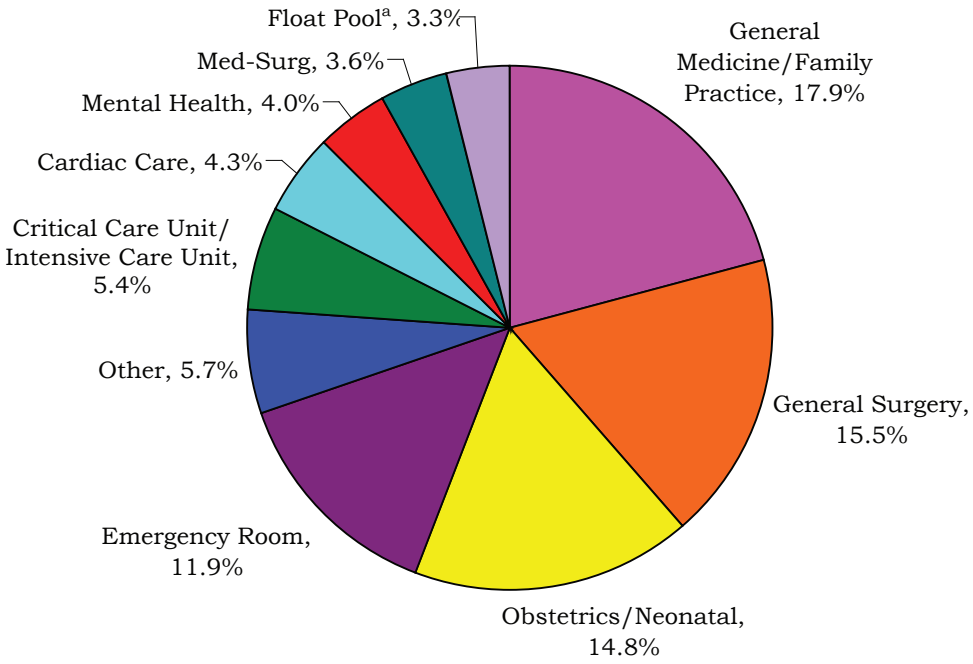
Note: Numbers do not add to 100.0% because only the top 10 hospital wards are shown.

Figure 4.11: Top 10 Hospital Wards, Age 55 and Older, July 1, 2005 - December 31, 2005



Note: Numbers do not add to 100.0% because only the top 10 hospital wards are shown.

Figure 4.12: Top 10 Types of Direct Patient Care, Nurses Working in Hospitals, Nursing Study, 2007



[a]Nurses work in a variety of units.

Note: Numbers do not add to 100.0% because only the top 10 types of direct patient care are shown.

Figure 4.13: Difference Between Expected Length of Stay and Actual Length of Stay, Under Age 55, Fiscal Year 2003

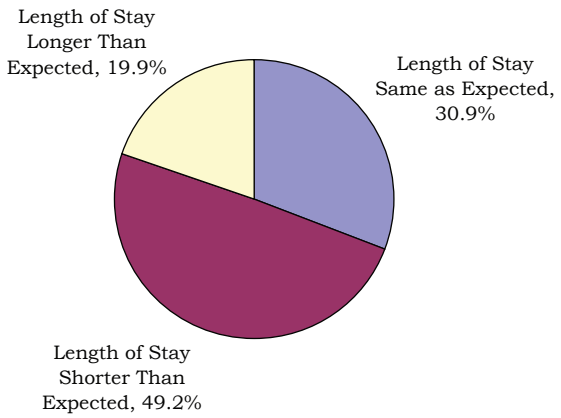


Figure 4.14: Difference Between Expected Length of Stay and Actual Length of Stay, Under Age 55, July 1, 2005 - December 31, 2005

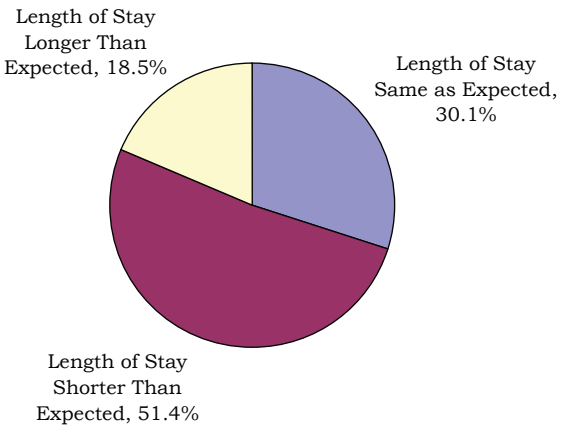
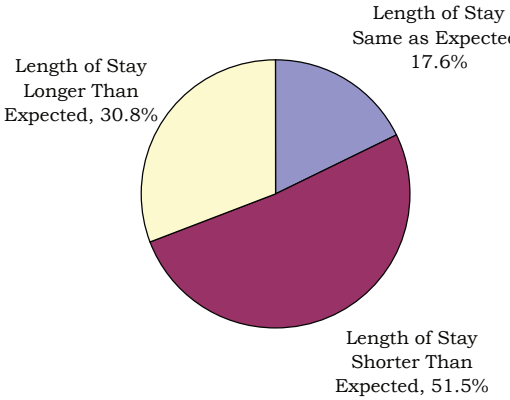
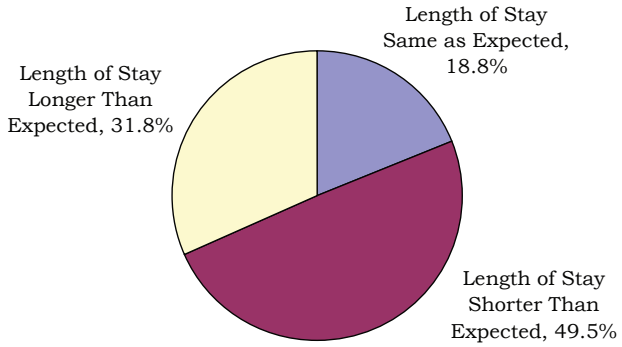


Figure 4.15: Difference Between Expected Length of Stay and Actual Length of Stay, Age 55 and Older, Fiscal Year 2003



Note: Numbers do not add to 100.0% due to rounding.

Figure 4.16: Difference Between Expected Length of Stay and Actual Length of Stay, Age 55 and Older, July 1, 2005 - December 31, 2005



Note: Numbers do not add to 100.0% due to rounding.

Figure 4.17: Population Percentages by Age and County, 2007

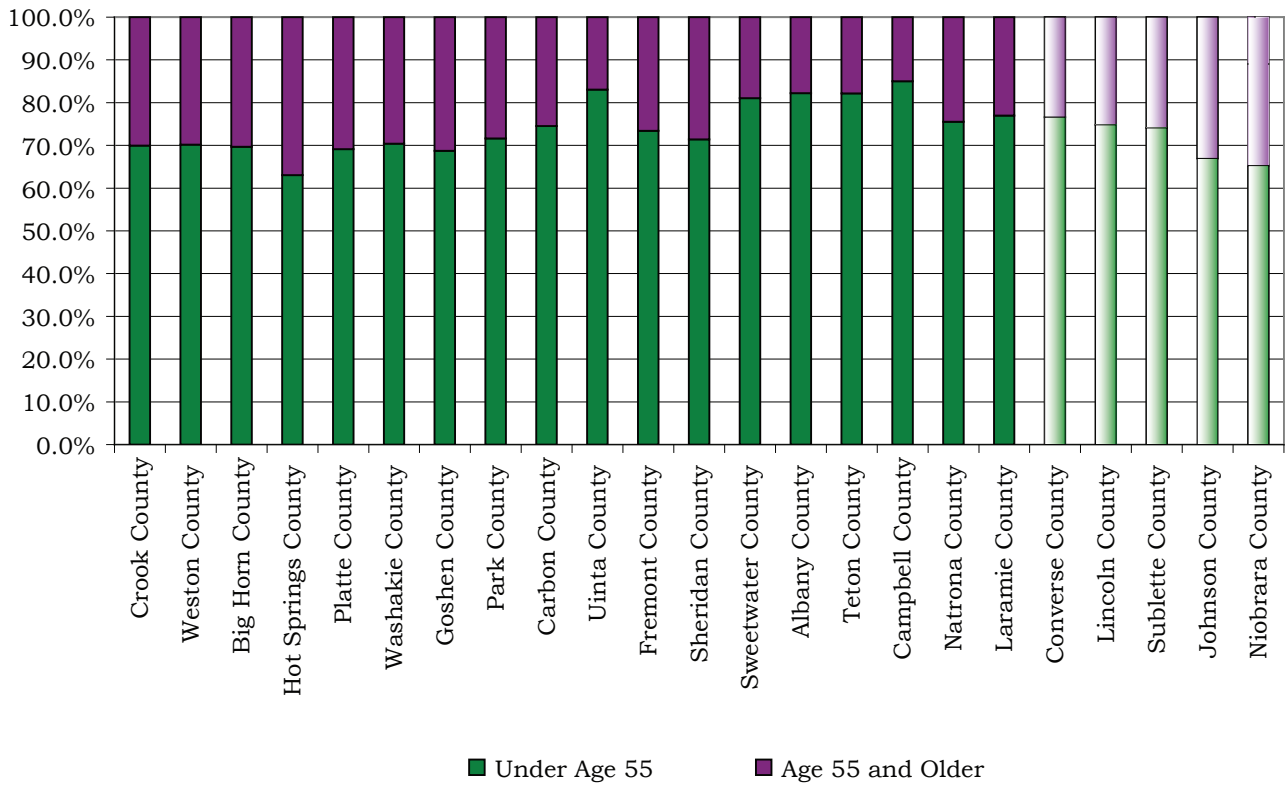


Figure 4.18: Population Percentages by Age and County, 2020 (Projected)

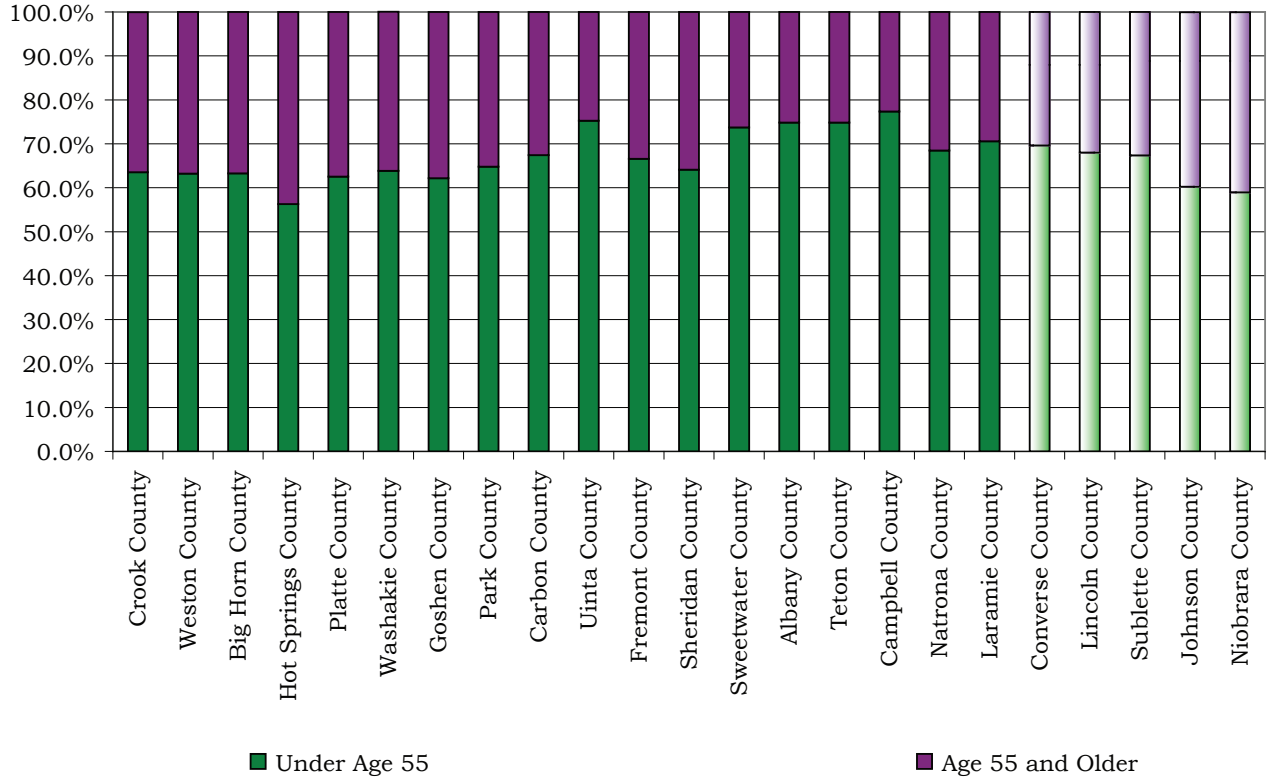


Figure 4.19: Difference Between Expected and Actual Length of Stay by Hospital, Patients Under Age 55 (Ordered By Number of Inpatients), 2006

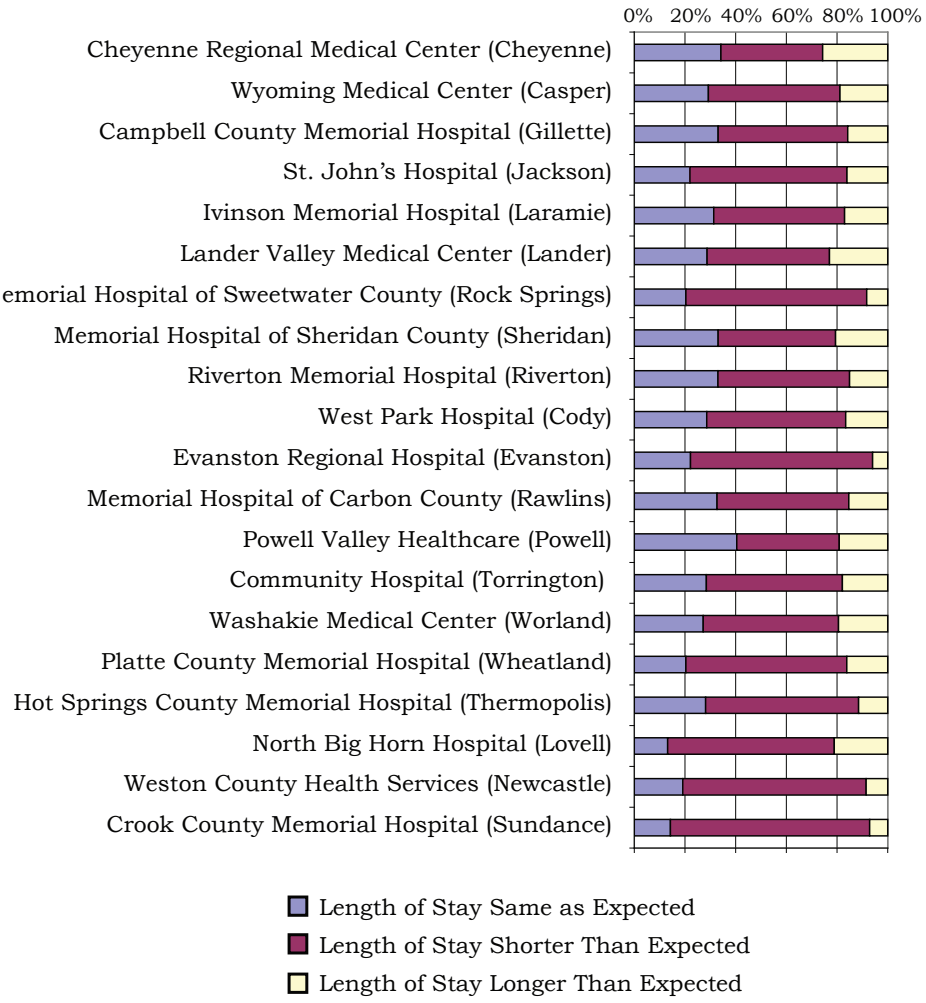


Figure 4.20: Difference Between Expected and Actual Length of Stay by Hospital, Patients Age 55 and Older (Ordered By Number of Inpatients), 2006

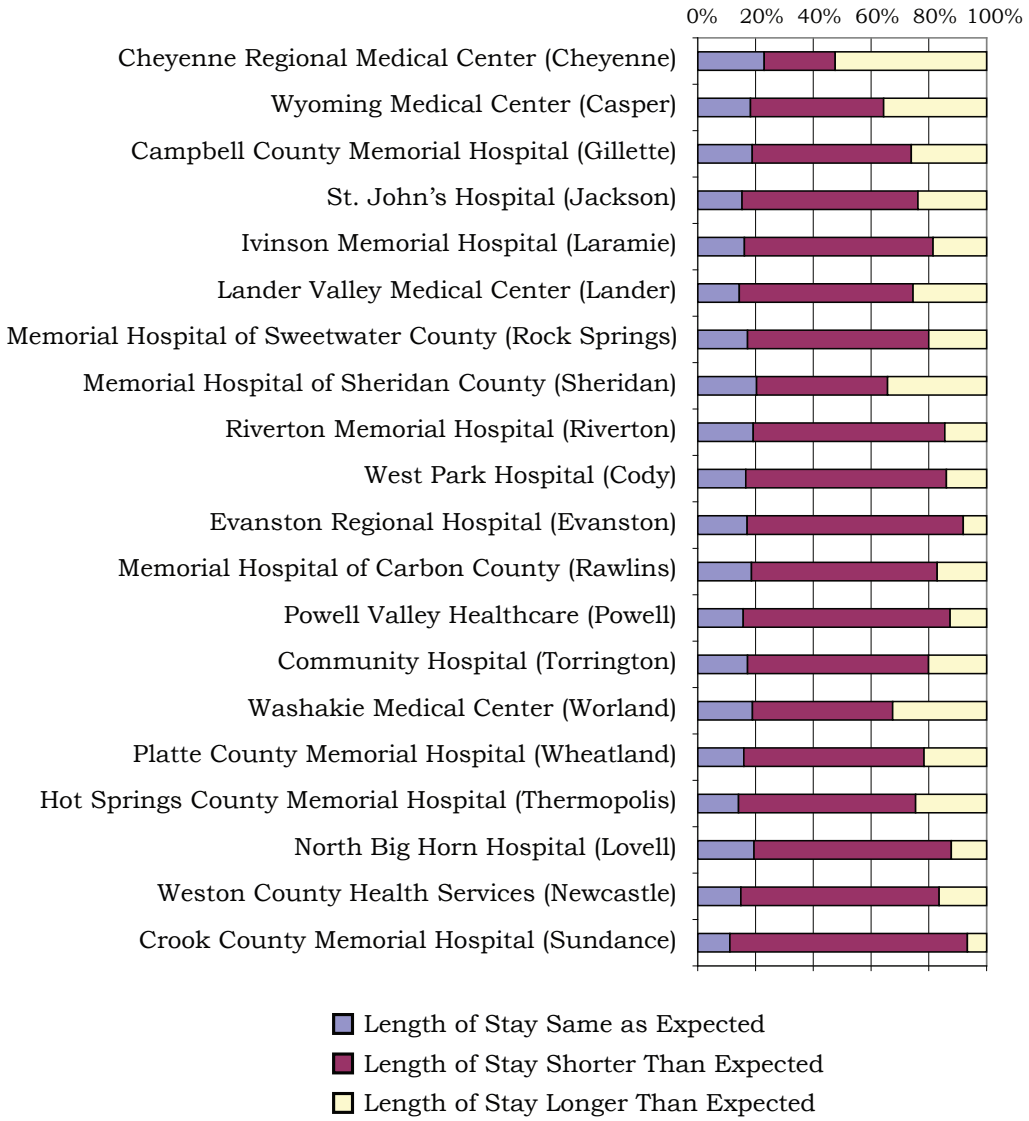


Table 4.1: Occupational Staffing Levels for the U.S. and Wyoming, Hospitals (North American Industry Classification System 622), May 2005

Occupation and Standard Occupational Classification Code	U.S. Employment	Column Percentage	U.S. Hourly Mean Wage	Wyoming Employment	Column Percentage	Wyoming Hourly Mean Wage
Management (11)	180,990	3.4%	$39.25	505	5.6%	$33.91
Business & Financial Operations (13)	85,730	1.6%	$24.05	103	1.1%	$21.71
Computer & Mathematical (15)	47,550	0.9%	$27.12	52	0.6%	$19.76
Architecture & Engineering (17)	4,680	0.1%	$26.76	ND	ND	ND
Life, Physical, & Social Science (19)	30,390	0.6%	$28.07	40	0.4%	$24.60
Community & Social Services (21)	125,570	2.4%	$20.21	150	1.7%	$20.11
Legal (23)	1,020	0.0%	$39.85	ND	ND	ND
Education, Training, & Library (25)	25,130	0.5%	$25.52	12	0.1%	$20.55
Arts, Design, Entertainment, Sports, & Media (27)	9,200	0.2%	$20.34	ND	ND	ND
Healthcare Practitioner & Technical (29)	**2,701,560**	**51.5%**	**$25.99**	**3,836**	**42.7%**	**$23.03**
Registered Nurses (291111)	***1,424,860***	***27.2%***	***$27.76***	***2,065***	***23.0%***	***$23.44***
Licensed Practical & Licensed Vocational Nurses (292061)	***187,420***	***3.6%***	***$16.70***	***211***	***2.4%***	***$15.32***
Healthcare Support (31)	**690,930**	**13.2%**	**$11.98**	**1,727**	**19.2%**	**$11.03**
Home Health Aides (311011)	***18,470***	***0.4%***	***$10.88***	***32***	***0.4%***	***$9.93***
Nursing Aides, Orderlies, & Attendants (311012)	***403,500***	***7.7%***	***$11.09***	***1,264***	***14.1%***	***$10.06***
Protective Service (33)	46,150	0.9%	$13.92	85	0.9%	$12.23
Food Preparation & Serving Related (35)	152,340	2.9%	$10.46	436	4.9%	$9.16
Building & Grounds Cleaning & Maintenance (37)	194,880	3.7%	$10.34	445	5.0%	$9.91
Personal Care & Service (39)	24,470	0.5%	$11.68	138	1.5%	$12.13
Sales & Related (41)	12,150	0.2%	$13.37	ND	ND	ND
Office & Administrative Support (43)	797,590	15.2%	$13.74	1,127	12.5%	$11.97
Construction & Extraction (47)	15,060	0.3%	$21.94	12	0.1%	$22.44
Installation, Maintenance, & Repair (49)	55,780	1.1%	$17.24	132	1.5%	$15.95
Production (51)	28,510	0.5%	$14.47	80	0.9%	$9.89
Transportation & Material Moving (53)	16,940	0.3%	$12.40	ND	ND	ND
Total, All Occupations	**5,246,630**	**100.0%**	**$21.10**	**8,980**	**98.9%**	**$17.84**

ND: No data available.

Table 4.2: Occupational Staffing Levels for South Dakota and Wyoming, Hospitals (North American Industry Classification System 622), May 2005

Occupation and Standard Occupational Classification Code	South Dakota Employment	Column Percentage	SD Hourly Mean Wage	Wyoming Employment	Column Percentage	Wyoming Hourly Mean Wage
Management (11)	467	2.4%	$40.01	505	5.6%	$33.91
Business & Financial Operations (13)	338	1.7%	$21.99	103	1.1%	$21.71
Computer & Mathematical (15)	246	1.3%	$23.69	52	0.6%	$19.76
Architecture & Engineering (17)	ND	ND	ND	ND	ND	ND
Life, Physical, & Social Science (19)	35	0.2%	$32.74	40	0.4%	$24.60
Community & Social Services (21)	406	2.1%	$19.12	150	1.7%	$20.11
Legal (23)	ND	ND	ND	ND	ND	ND
Education, Training, & Library (25)	ND	ND	ND	ND	ND	ND
Arts, Design, Entertainment, Sports, & Media (27)	65	0.3%	$19.52	ND	ND	ND
Healthcare Practitioners & Technical (29)	**9,524**	**49.1%**	**$23.32**	**3,836**	**42.7%**	**$23.03**
Registered Nurses (29-1111)	***5,304***	***27.4%***	***$24.43***	***2,065***	***23.0%***	***$23.44***
Licensed Practical & Licensed Vocational Nurses (292061)	***496***	***2.6%***	***$14.11***	***211***	***2.4%***	***$15.32***
Healthcare Support (31)	**2,982**	**15.4%**	**$10.41**	**1,727**	**19.2%**	**$11.03**
Home Health Aides (31-1011)	***112***	***0.6%***	***$9.35***	***32***	***0.4%***	***$9.93***
Nurse Aides, Orderlies, & Attendants (31-1012)	***1,998***	***10.3%***	***$9.78***	***1,264***	***14.1%***	***$10.06***
Protective Service (33)	85	0.4%	$12.92	85	0.9%	$12.23
Food Preparation & Serving Related (35)	886	4.6%	$9.51	436	4.9%	$9.16
Building & Grounds Cleaning & Maintenance (37)	888	4.6%	$9.87	445	5.0%	$9.91
Personal Care & Service (39)	397	2.0%	$10.54	138	1.5%	$12.13
Sales & Related (41)	ND	ND	ND	ND	ND	ND
Office & Administrative Support (43)	2,336	12.1%	$11.96	1,127	12.5%	$11.97
Construction & Extraction (47)	33	0.2%	$19.26	12	0.1%	$22.44
Installation, Maintenance, & Repair (49)	263	1.4%	$16.84	132	1.5%	$15.95
Production (51)	198	1.0%	$11.09	80	0.9%	$9.89
Transportation & Material Moving (53)	142	0.7%	$13.13	ND	ND	ND
Total, All Occupations	**19,377**	**99.6%**	**$18.45**	**8,980**	**98.8%**	**$17.84**

ND: No data available.

Substate Economic–Demographic Interaction and the Health Care Delivery System

by: Sylvia D. Jones, Senior Research Analyst

The demand for nurses in Wyoming is attributable to many factors including changing demographics, nurse retirement, limited availability for training, and other issues discussed in this publication. This chapter examines the health care system in 2000 and 2007 at the regional level in an effort to better understand the underlying dynamics of the health care system in the state.

It could be argued that the relatively rural nature of Wyoming is a factor in the current and projected nurse and health care worker shortages. While there are many definitions of *rural* and *urban*, one of the most clear is the Census-defined Core Based Statistical Area (CBSA) status. There are three categories: metropolitan, micropolitan, and areas outside CBSAs (proxy for *rural*). Between 1990 and 2000, the national population in areas outside CBSAs grew by 7.8% while the population in metropolitan areas grew by 14.0% and in micropolitan areas by 10.0% (Mackun, 2005). Between 2000 and 2006, rural areas grew by 1.2% while metropolitan areas grew by 7.2% and micropolitan areas increased by 3.6% (U.S. Census Bureau, 2007). The growth in the more metropolitan areas indicates that the population, at least on the national level, is becoming more urban. One reason for this phenomenon is a matter of classifications: Geographic regions formerly designated as rural areas are becoming more metropolitan and were redesignated as metropolitan areas. Another reason is immigration: Immigrants disproportionately settle in metropolitan areas. A third reason is migration from rural to urban areas, although this effect has been small. In fact, between 1995 and 2000, more people moved into nonmetropolitan areas from metropolitan areas than vice versa (Schachter, Franklin, & Perry, 2003).

Between 2000 and 2006, Wyoming trends were similar in scope if not in scale to national trends. According to Census definitions, 9 of the 23 Wyoming counties are considered either metropolitan or micropolitan. During this period, the metropolitan population increased by 4.6% while the nonmetropolitan population rose by only 1.4%. Foreign immigration is not as much a factor in the state as it is on the national level, so the metropolitan growth is likely due to internal migration either from other states or from other counties within the state. Recent research regarding nonresident work patterns suggests that the population growth is due more to interstate migration than to intrastate migration (Jones, 2007; Leonard, 2007).

An effect of the rural nature of Wyoming is the availability of health care. The counties with the smallest populations typically have fewer health care options than the larger population bases in the state. As a general rule, towns are fairly widespread; a long-distance commute to a larger town may be required if additional health care is needed. The commute may be an impossibility for some, especially the elderly. Winter weather may also make travel more difficult. In an effort to maximize the availability of care, the state has 22 hospitals, the majority of which are small. Each hospital has its own challenges but each is affected to some degree by the need for nurses. Research indicates that rural areas, including hospitals, typically have more difficulty recruiting and retaining

nurses than do urban areas. Without adequate staffing, hospitals will face increasing difficulty in maintaining patient care. This could lead elderly residents to relocate or seek medical care in other areas.

The Shortage Designation Branch in the U.S. Department of Health and Human Services Health Resources and Services Administration (2007) develops shortage designation criteria and uses them to decide whether a geographic area or population group is a HPSAs (HPSA). There are separate designations for medical, dental, and mental health professionals. At present, 10 of Wyoming's 23 counties are designated as medical Health Professional Shortage Areas. That means at a minimum, 24% of the population lacks adequate access to medical care. Another 8 counties have at least one region or facility with the designation. The shortage is more pronounced for mental health professionals because all counties have at least one designated shortage area.

There are many counties at serious risk for health professional shortages based solely on the percentage of residents over age 65 compared to those 18-64. For this analysis we slightly underestimated the need by considering only those age 20-64 compared to those 65 and older. Since a ratio of one person over age 64 to four persons age 18-64 is the standard HPSA level of concern, that is the level we used as well. As shown in **Table 5.1**, of the 23 counties in 2000, 11 met or exceeded the guidelines. Goshen County had the highest ratio. Using the Census population projections we can estimate the same ratios for the year 2020. If the projections are correct, 20 of the 23 counties are expected to meet the criteria. The highest is projected to be Hot Springs County. Using these figures, only Albany, Campbell, and Teton counties will be exempt.

Even with the existence of 22 hospitals located throughout the state, almost half of the counties are considered medical HPSAs. If health professionals, such as physicians, are in short supply, who provides health care? Are residents forced to commute or relocate to a larger town? Do they rely on the next tier of medical professionals, such as registered nurses, for their health care needs? Or, do they simply go without medical care in general? These questions and others need to be addressed before the changing demographic character of the state can be fully understood.

There is little doubt that the demographic profile of Wyoming is aging and is expected to continue aging. As such, it is becoming increasingly important that the health care delivery system be evaluated in order to ensure adequate delivery to those in need. It may become necessary to redesign the current system to meet the demands of a changing population. Population growth, or even segmental population growth, in rural areas will likely increase demand for nurses with a broad range of experience rather than nurses with narrow, specialized experience. As such, increased demand may place upward pressure on wages and reverse the trend of higher pay for specialization. Alternatively, urban growth in population and health care delivery may decrease the need for health care providers in rural areas as residents increasingly travel to population centers for their needs. However, it is impossible to plan or implement strategies to align the distribution of health care with the aging demographic without a firm understanding of the health care system as it currently exists at the substate level.

Although the state's population is rapidly aging, the current economic expansion could increase the number of younger residents above what is expected.

However, it is unlikely that the projected number of older residents is significantly overestimated. Three counties in the state, Teton, Park, and Sheridan, are currently classified as "retirement destination counties" by the Economic Research Service (RUPRI, 2006).

As discussed in previous chapters, there are substantial differences between the health care needs of the elderly and the needs of a younger population. Older residents are likely to increase demand for health services. Older individuals often suffer from different ailments than younger individuals and require different treatment options. The decisions faced by the elderly are usually different from decisions faced by younger people (for instance, retirement versus starting or changing careers, or long-term care options versus having children). As such, as the population ages, it is expected that the requirements for the health care system will change.

Another important facet of the changing system is insurance coverage. Glied and Stabile (1999) predicted that private insurance coverage among the near-elderly (i.e., persons ages 61-64) would drop 4.5% by 2005 because of trends relating to the labor market behavior of the elderly and the decline in employer-provided health insurance. Although the proportion of the population age 61 to 64 who were employed full-time increased between 1989 and 1997, the authors reported that older workers would have been affected by the nationwide decline in private medical insurance. The majority of the baby boom generation is entering a phase when they are not yet eligible for Medicare and are largely relying on current or past employers (if retired) for medical insurance. Declining rates of coverage among the near-elderly could result in a decline in preventative care, with long-term implications for this group as they age. This is especially relevant in light of a study to be released in the January/February issue of *CA: A Cancer Journal for Clinicians* that concluded people diagnosed with cancer (18 different types) who do not have health insurance have a 60% greater chance of dying than those with health insurance. The difference was primarily due to the absence of screening tests among the noninsured (Reinberg, 2007).

According to a survey of Wyoming AARP members (Dinger, 2004), health care is the main reason workers over age 50 say they will need to keep working after retirement. Nearly as many wanted an employer-provided health insurance plan as those who planned to work just to earn the money to pay the monthly premium on an existing plan. In contrast, Wyoming businesses said they were not eager to provide health insurance to older workers, especially part-time workers (Dinger, 2004).

The number of people in the nation who have health insurance but are at risk of bankruptcy due to a medical crisis is growing. While approximately 47 million people in the United States lack any health insurance, tens of millions of middle-class Americans are underinsured. According to Shoen, Doty, Collins, & Holmgren (2005), an underinsured person is one who has health insurance but inadequate financial protection, as indicated by one of three conditions:

- Annual out-of-pocket medical expenses amount to 10% or more of income;
- Among low-income adults (incomes under 200% of the federal poverty level), out-of-pocket medical expenses amount to 5% or more of income; or
- Health plan deductibles equal or exceed 5% of income.

More than half of underinsured adults go without necessary medical care because of associated costs. To cover health care costs, 53% of adult Americans have decreased contributions to other savings, 36% have decreased contributions to retirement plans, 33% have used all or most of their savings, and 18% have had difficulty paying for necessities like food, heat, and housing (DividedWeFail.org, n.d.).

Although the number of underinsured in the state is not known, the number of uninsured can be estimated. The Wyoming Benefits Survey examines the offering of and enrollment in selected benefits in the state by employers and employees. The data are analyzed for both full- and part-time employees by employer size and industry. The 2007 survey indicated that between 2004 and 2006, the percentage of employers offering health insurance to their full-time employers fell from 52.2% to 43.2% and the percentage of employees offered health insurance fell from 87.9% to 79.2% (Hauf & Knapp, 2008). This is a significant finding in light of the Glied & Stabile (1999) research. The number of near-elderly is continuously rising in Wyoming at the same time that employer-provided health insurance is declining. This places many individuals at risk of exacerbated age-related health conditions because of the paucity of preventative care.

The Wyoming Benefits Survey also found that larger employers have a higher probability of offering health insurance than smaller employers (Hauf & Knapp, 2008). To estimate the effect, the average employee-to-employer ratio was calculated for each county in first quarter 2000 and first quarter 2007 (see **Table 5.2**). While an estimate only, in general, the larger the ratio, the larger the average firm and, in theory, the more likely health insurance is to be offered. In first quarter 2007, Campbell County had the highest ratio (16.0), followed by Sweetwater and Laramie counties (14.7 and 13.5, respectively). The counties with the largest number of residents of any age match with the upper-end firm/employee ratio. Of concern, however, are the few counties (e.g., Park County) with a large young-old population but a fairly low firm/employee ratio. A low ratio would be expected in Park County, however, because a relatively high proportion of businesses employ seasonal and temporary workers. These workers, in general, are not offered health insurance (Gallagher et al., 2005).

Regional Findings

The Quarterly Census of Employment and Wages was used to describe the county and regional health care delivery systems. The data set summarizes employment and wage data for employers subject to the Wyoming Employment Security Law (Wyoming Statutes §§27-3-101 through 27-3-705), and federal civilian workers covered by the Unemployment Compensation for Federal Employees program. In order to facilitate discussion of the results, a center was designated for each region and analyzed separately from the surrounding counties. Because of confidentiality requirements, only the change in total firm count is reported at the substate level. Average employment, total wages, and average weekly wages are reported as aggregates only.

Southeast Region

The Southeast Region is defined as Albany, Goshen, Laramie, Niobrara, and Platte counties. Laramie County not only contains the state capital and the largest city in the state, it is also a metropolitan area. For this analysis, it is considered the regional center of the Southeast Region.

The Southeast Region had the highest overall rate of population increase from 2000 to 2007. Population growth and economic growth were primarily focused in the regional center. In addition, health care growth was larger in Laramie County than in the surrounding counties. Health care firms related to elder care also were more numerous in the regional center. In this region, the presence of health care practitioners, as well as the availability of long-term health care services, appears to be highly related to population.

Population

The total population in the outlying counties between 2000 and 2007 was estimated to have declined by 348 individuals (-0.6%; see **Table 5.3**) while the population in Laramie County itself grew by 4,278 (5.2%). The loss of population in the outlying counties was mostly explained by the decrease of 2,108 (-4.8%) residents age 55 or younger. Growth among 56- to 74-year-olds and those in the 75-and-older age group nearly compensated for the large decline in younger residents (1,523, or 18.4%, and 241, or 7.4%, respectively). Laramie County showed strong growth in both the 56-74 age group (3,028, or 25.1%) and the 75-and-older group (813, or 18.7%). The number of young residents increased slightly.

Insurance Coverage

In first quarter 2007, the outlying counties had an employment-to-firm ratio equal to the statewide average of 11.1 (see **Table 5.2**). Laramie County, on the other hand, had a higher-than-average ratio (13.5), indicating that employers in the regional center were, on average, larger and more likely to offer health insurance.

Economic Change

In the outlying counties (see **Table 5.4**), overall growth was comparatively slow. Between first quarter 2000 and first quarter 2007, the number of firms increased by 183 (9.4%), employment increased by 1,687 (7.7%), total payroll rose by $52,093,990 (43.0%), and average weekly wages went up by $139 (32.8%). In comparison, the health care & social assistance sector showed more impressive percentage growth in the number of firms (17, or 19.3%) and employment (326, or 17.7%), but grew more slowly than the local economy as a whole in both total payroll and average weekly wages.

The majority of health care-related growth occurred in ambulatory health care services. In first quarter 2000 there were 76 firms; in first quarter 2007 there were 93, an increase of 22.4%. Most of the growth, however, was not focused in elder-specific subindustries. For instance, the largest changes occurred in offices of physicians (except mental health); offices of physical, occupational, & speech therapists & audiologists; and offices of all other miscellaneous health practitioners. The only subindustry in ambulatory health care services directly related to care of the elderly that grew was home health care services, which added two firms. Nursing & residential care facilities remained constant in the number of firms. The number of nursing care facilities declined by one, while the number of homes for the elderly decreased by two. One continuing care retirement community was added, however, so while there was overall decline in elder-centric subindustries, the loss was not unilateral.

In Laramie County (see **Table 5.5**), the regional center, overall economic growth was moderate. Between first quarter 2000 and first quarter 2007, the number of firms increased by 564 (22.5%), employment increased by 6,239 (17.6%), total payroll

rose by $134,485,325 (58.9%), and average weekly wages increased by $174 (35.0%). In comparison, the health care & social assistance sector showed greater percentage growth in the number of firms (47, or 34.8%), employment (1,445, or 45.1%), and total payroll ($24,129,526, or 89.1%). On a percentage basis, average weekly wages in health care grew more slowly than the local economy as a whole.

Laramie County experienced significant growth in both ambulatory health care and nursing & residential care between first quarter 2000 and first quarter 2007. Ambulatory care grew by 38 firms (29.2%), mostly in offices of physicians (except mental health) and offices of mental health practitioners (except physicians). Nursing & residential care grew by 9 firms, or 180.0%. Elder-specific subindustries grew in nursing care facilities (3) and continuing care retirement facilities (2). Homes for the elderly declined by 1 firm and home health care agencies stayed the same.

Southwest Region

The Southwest Region is composed of Lincoln, Sublette, Sweetwater, Teton, and Uinta counties. According to Census definitions, Sweetwater, Teton, and Uinta counties are considered micropolitan areas. However, because recent research showed Sweetwater County received the largest number of in-commuting workers (Leonard, 2007), it was considered the regional center for this analysis.

In the case of this region, both population and economic growth were centered in the outlying counties rather than the regional center. Health care growth, similar to general economic growth, was also more pronounced in the outlying counties. The percentage of residents age 75 and older increased rather substantially in the areas surrounding the regional center and could have played a part in the growth of firms related to care of the elderly. In Sweetwater County itself, which had a substantial increase in the number of 56- to 64-year-old residents only, health care growth was minimal and growth in elder-related firms was nonexistent. Again, it appears that overall health care growth is tied to general population growth, whether in the regional centers or in the outlying counties.

Population

The total population in the outlying counties between 2000 and 2007 was estimated to have increased by 4,763 individuals (8.1%; see **Table 5.3**) while the population in Sweetwater County itself declined significantly by 1,173 (-3.1%). Population growth in the outlying counties occurred in all age groups, but the increase in the 56- to 74-year-old segment was the largest both in actual number as well as percentage (2,590, or 32.3%). Those age 55 or younger experienced the smallest percentage change (1,675, or 3.5%) followed by the 75-and-older group (497, or 23.3%). Sweetwater County's declining overall population was a function of the large decline in residents under age 55 (-2,315, or -7.3%). The number of 56- to 74-year-olds actually increased rather significantly (1,126, or 24.7%) while the increase in the number of residents age 75 and older grew at a more modest pace (13, or 0.9%).

Insurance Coverage

In first quarter 2007, the outlying counties had an employment-to-firm ratio of 8.8, a value much lower than the statewide average of 11.1 (see **Table 5.2**). Sweetwater County, on the other hand, had a higher-than-average ratio (14.7), indicating that employers in the regional center were, on average, larger and more likely to offer health insurance to their employees.

Economic Change

Outlying Counties: In the outlying counties (see **Table 5.6**), overall growth was comparatively impressive. Between first quarter 2000 and first quarter 2007, the number of firms increased by 944 (28.1%), employment increased by 8,950 (30.8%), total payroll rose by $179,851,583 (95.4%), and average weekly wages went up by $246 (49.5%). In comparison, the health care & social assistance sector showed fairly consistent change. The number of firms was the only measure in which health care growth outpaced the growth in the local economy (50, or 40.3%, and 944, or 28.1%, respectively), at least on a percentage basis. Employment in health care grew by 530 (22.8%), total payroll increased by $11,409,879 (74.7%), and average weekly wages rose by $214 (42.2%).

The outlying counties in the Southwest Region experienced quite a bit of health care-related growth between first quarter 2000 and first quarter 2007. Ambulatory health care gained 40 firms (36.7%) while nursing & residential care gained 6 firms (50.0%). Offices of physicians (except mental health) saw the largest increase with the addition of 7 new firms (17.1%). Elder-specific subindustries also grew considerably during the reference period. A net of 4 new home health care agencies and 3 new homes for the elderly were established. Nursing care facilities remained unchanged.

Regional Center: In Sweetwater County (see **Table 5.7**), the trends were very dissimilar to the outlying counties. Overall economic growth was moderate but health care growth was fairly low. Between first quarter 2000 and first quarter 2007, the number of total firms in the county increased by 383 (30.3%), employment increased by 5,783 (31.5%), total payroll rose by $121,639,752 (75.7%), and average weekly wages went up by $226 (33.5%). In comparison, the health care & social assistance sector showed significantly slower growth. The number of firms in health care increased by 12 (16.0%), employment grew by 152 (14.9%), total payroll increased by $2,556,782 (35.2%), and average weekly wages rose by $97 (17.7%).

All of health care growth was centered in ambulatory care (increase of 12 firms, or 19.4%). The largest growth occurred in offices of chiropractors and all other miscellaneous health care practitioners (3 firms each). Regarding subindustries related to the elderly, a new nursing care facility was added; however, 1 home health care firm and 1 home for the elderly were lost.

Northwest Region

The Northwest Region is made up of Big Horn, Fremont, Hot Springs, Park, and Washakie counties. Fremont County is the only county considered a micropolitan area; however, because Park County had a larger number of in-commuters, it was considered the regional center for this analysis.

In the Northwest Region, both population and economic growth were smaller than in other regions of the state, but were somewhat more pronounced in the regional center than in the outlying counties. Health care growth, similar to general economic growth, was also more prominent in the regional center. The percentage of age 75 and older residents was comparatively minor when compared to other areas in Wyoming and, perhaps accordingly, there was no growth in elder-centric subindustries for either Park County or the other counties in the region. As in the other regions, overall health care growth appeared to be tied to general population growth.

Population

The total population in the outlying counties between 2000 and 2007 was estimated to have decreased by 285 individuals (-0.5%; see **Table 5.3**) while the population in Park County itself increased by 1,332 (5.2%). Population decline in the outlying counties occurred in only the 55-and-younger segment, but the increase in the 56- to 74-year-old segment was the largest both in actual number as well as percentage (1,599, or 14.2%). Park County's overall population increase was mostly a function of a substantial increase in the age 56-64 segment (1,143, or 24.2%). The number of people age 75 and older increased somewhat (196, or 10.9%) while the number of residents under age 55 fell slightly by 7 (0.0%).

Insurance Coverage

In first quarter 2007, the outlying counties had an employment-to-firm ratio of 9.5, a value lower than the statewide average of 11.1 (see **Table 5.2**). Park County had an even lower ratio than the surrounding counties (8.3), indicating that, unlike in the other regions of the state, Northwest Region employers were generally larger outside of the regional center and thereby more likely to offer health insurance to their employees.

Economic Change

Outlying Counties: In the outlying counties (see **Table 5.8**), overall growth was minimal. Between first quarter 2000 and first quarter 2007, the number of firms increased by 236 (9.8%), employment increased by 2,168 (9.4%), total payroll rose by $65,978,335 (51.3%), and average weekly wages went up by $165 (38.2%). In comparison, the health care & social assistance sector also showed fairly minimal change. The average weekly wage was the only measure in which health care growth outpaced the growth in the local economy ($211, or 45.8%, and $165, or 38.2%, respectively), at least on a percentage basis. Total firms in health care grew by 11 (9.6%), total employment increased by 75 (2.7%), and total payroll increased by $8,142,613 (49.8%).

Table 5.8 shows there was very minimal health care-related growth in the outlying counties of the Northwest Region. Ambulatory care gained only 10 new firms (10.6%) and nursing & residential care gained only 1 new firm (9.1%). Offices of chiropractors saw the largest increase with the addition of 4 firms (57.1%). Elder-specific subindustries gained 1 nursing care facility and lost 1 home health care service. Homes for the elderly remained constant.

Regional Center: In Park County (see **Table 5.9**), the trends were again different from the outlying counties. Overall economic growth was fairly low but health care growth was moderate. Between first quarter 2000 and first quarter 2007, the number of total firms in the county increased by 165 (13.1%), employment increased by 1,374 (13.1%), total payroll rose by $40,160,037 (68.1%), and average weekly wages went up by $210 (48.6%). In comparison, the health care & social assistance sector showed somewhat greater growth. The number of firms in health care increased by 13 (21.0%), employment grew by 333 (30.1%), total payroll increased by $5,671,138 (79.5%), and average weekly wages rose by $241 (46.8%). Percentage growth in health care was larger than the local economy as a whole in every measure except average weekly wages.

Park County experienced slightly more growth than in the outlying counties. Ambulatory care added 8 firms (14.3%), spread fairly evenly over several

subindustries. Nursing & residential care added 4 firms (100.0%), mostly as other residential care facilities (4). The county added 1 continuing care retirement community but lost a home for the elderly. Home health care services remained unchanged.

Northeast Region

The Northeast Region is comprised of Campbell, Crook, Johnson, Sheridan, and Weston counties. Campbell County is both a micropolitan area as well as the destination for the largest number of commuters in the region. Therefore, the regional center of the Northeast Region is Campbell County.

In the Northeast Region, population growth was significant in Campbell County, but not in the outlying counties. The economies, though, grew at fairly similar rates. Health care growth, too, was similar between the regional center and the surrounding counties. The most notable observation on this region is the phenomenal growth in total payroll. This is potentially explained by the noted competition for labor in the area. It is possible that the apparent lack of correlation between population and health care growth could simply be a function of a depressed labor supply. Firms cannot grow without available workers.

Population

The total population in the outlying counties between 2000 and 2007 was estimated to have increased by 2,534 individuals (5.5%; see **Table 5.3**) while the population in Campbell County itself increased by 4,123 (12.1%). Population growth in the outlying counties was smallest in the 55-and-younger age group, while populations in the 56- to 74-year-old and 75-and-older groups increased substantially more (1,860, or 21.0%, and 532, or 15.1%, respectively). Campbell County's overall population increase was mostly a function of substantial increases in all age groups. Age 56 to 74 residents increased by the largest percentage (1,745, or 53.8%), followed by the number of 75-and-older residents (307, or 44.4%), and the number of 55-and-younger residents (2,070, or 6.9%).

Insurance Coverage

In first quarter 2007, the outlying counties had an employment-to-firm ratio of 8.6, a value lower than the statewide average of 11.1 (see **Table 5.2**). Alternatively, Campbell County had a ratio almost twice as large as that of the surrounding counties (16.0). This indicates that employers in Campbell County were, on average, larger than employers in the surrounding areas and were more likely to offer health insurance to employees.

Economic Change

In the outlying counties (see **Table 5.10**), overall growth was moderate. Between first quarter 2000 and first quarter 2007, the number of firms increased by 431 (21.9%), employment increased by 3,804 (22.7%), total payroll rose by $70,870,062 (74.7%), and average weekly wages went up by $185 (42.4%). In comparison, the health care & social assistance sector also showed fairly moderate change. There were no measures in which health care growth outpaced the growth in the local economy, at least on a percentage basis. Total firms in health care grew by 19 (19.6%), total employment increased by 372 (22.7%), total payroll increased by $9,563,549 (59.6%), and average weekly wages rose by $209 (35.6%).

The outlying counties of the region saw health care growth, but all of it was located in ambulatory care (19, or 23.8%). The

largest increase was in offices of dentists (4). There was no net growth in nursing & residential care. Subindustries directly related to the elderly added 1 home health care service and 1 home for the elderly. Nursing care facilities remained constant.

In Campbell County (see **Table 5.11**), the trends were fairly similar to the outlying counties. Overall economic growth as well as health care growth was substantial. Between first quarter 2000 and first quarter 2007, the number of total firms in the county increased by 395 (31.2%), employment increased by 8,925 (50.5%), total payroll rose by $178,615,219 (121.8%), and average weekly wages went up by $302 (47.3%). In comparison, the health care & social assistance sector showed somewhat more moderate growth. The number of firms in health care increased by 9 (18.0%), employment grew by 346 (33.1%), total payroll increased by $8,029,416 (113.6%), and average weekly wages rose by $315 (60.5%). Percentage growth in health care was smaller than the local economy as a whole in every measure except average weekly wages.

Campbell County experienced some growth in both ambulatory care and nursing & residential care. Ambulatory care added 7 firms (15.6%), mostly as offices of physical, occupational, & speech therapists & audiologists (5). Nursing & residential care increased by 1 firm (25.0%) with the addition of a home for the elderly. Nursing care facilities remained constant and home health care services declined by 1.

Central Region

The Central Region is composed of only three counties: Carbon, Converse, and Natrona. Natrona County is a metropolitan area as well as a center for a significant amount of in-commuting, and therefore was selected as the regional center for this analysis.

In the Central Region, both population and economic growth were more pronounced in the regional center than in the outlying counties. Health care growth, similar to general economic growth, was also more prominent in the regional center. The percentage of 75-year-old and older residents was larger in Natrona County than in any other county of the state; however, there was very little growth in elder-centric subindustries for either the regional center or the surrounding counties. As in the other regions, overall health care growth appeared to be tied to general population growth, but in this case, elder-specific firms were not as closely tied to the 75-and-older population as would be expected.

Population

The total population in the outlying counties between 2000 and 2007 was estimated to have decreased by 201 individuals (-0.7%; see **Table 5.3**) while the population in Natrona County itself increased by 3,190 (4.8%). Population growth in the outlying counties occurred in all but the youngest age group (55 and younger), which declined by 1,132 (-5.2%). Of all the counties, Natrona County experienced the largest increase in the 75-year-old and older segment with the addition of 1,383 individuals (37.3%). Residents age 56 to 74 also increased (1,957, or 18.7%), while the number of residents age 55 and younger declined (-150, or -0.3%).

Insurance Coverage

In first quarter 2007, the outlying counties had an employment-to-firm ratio of 9.8, a value lower than the statewide average of 11.1 (see **Table 5.2**).

Alternatively, Natrona County had a ratio larger than that of the surrounding counties (12.2). This indicates that employers in the regional center were, on average, larger than employers in the surrounding areas and were more likely to offer health insurance to employees.

Economic Change

In the outlying counties (see **Table 5.12**), overall growth was low to moderate. Between first quarter 2000 and first quarter 2007, the number of firms increased by 85 (7.6%), employment increased by 1,525 (22.7%), total payroll rose by $39,681,176 (61.9%), and average weekly wages went up by $197 (41.0%). In comparison, the health care & social assistance sector also showed low to moderate change. Employment and total wage were the two measures in which health care growth outpaced the growth in the local economy, at least on a percentage basis. Total firms in health care grew by 2 (4.1%), total employment increased by 128 (16.1%), total payroll increased by $4,181,118 (81.9%), and average weekly wages rose by $280 (56.7%).

Total health care firm counts for the outlying counties of the Central Region remained essentially unchanged between first quarter 2000 and first quarter 2007. Ambulatory care netted only two firms during the reference period, mostly because of the loss of five offices of physicians (except mental health). Three offices of mental health practitioners (except physicians) were added, however. There was similarly no net change in nursing & residential care because the loss of a home for the elderly was balanced out by the addition of a residential mental health and substance abuse facility. There was also an addition of one home health care service, so the elder-specific subindustries grew slightly.

In Natrona County (see **Table 5.13**), growth was more significant than in the outlying counties. Overall economic growth was very similar to health care growth. Between first quarter 2000 and first quarter 2007, the number of total firms in the county increased by 395 (14.4%), employment increased by 7,784 (25.5%), total payroll rose by $179,120,330 (90.0%), and average weekly wages went up by $258 (51.5%). In comparison, the health care & social assistance sector showed more moderate growth in all measures except average weekly wages. The number of firms in health care increased by 48 (15.4%), employment grew by 1,295 (30.8%), total payroll increased by $30,241,832 (95.6%) and average weekly wages rose by $287 (49.5%).

Natrona County health care grew more than the outlying counties but not at a rapid pace. Ambulatory care (23 firms) as well as nursing & residential care (2 firms) both grew at approximately 15.0%. Offices of optometrists; offices of physical, occupational, & speech therapists & audiologists; and all other miscellaneous ambulatory health care services were the subindustries with the largest gains, each with an increase of 4 firms. Most of the growth in nursing & residential care was focused in the elder-specific subindustries. Continuing care retirement communities increased by 2 and homes for the elderly increased by 1. Nursing care facilities declined by 1 and home health care services declined by 2.

Conclusion

Wyoming has a relatively large cohort of older residents with a limited number of younger residents to take the place of retiring workers. Health care needs are likely to change significantly in the coming years. As health care costs rise, employers

may drop health care insurance benefits, leaving an increasing number of uninsured residents. Many of these residents could be those nearing retirement age but who have not yet reached Medicare eligibility age. The lack of health care could limit preventative care to that group, thereby increasing the acuity of cases seen in hospitals and long-term care facilities in the near future.

At least one-quarter of Wyoming's current population lives in a county with an inadequate number of health care professionals. More doctors are limiting Medicare patients because reimbursement rates are lower than private insurance (Wagner, 2004). If this trend continues, health care availability may become a crisis of its own as the Medicare-eligible population increases.

While the number of health care firms has grown in all regions of the state, the growth is in no way equal. The majority of health-related change is closely tied to overall employment and population growth. While it does make sense from an economic standpoint, it certainly leaves holes in delivery to the rural, often elderly populations of the slower-growing counties.

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Table 5.1: Population of Wyoming Residents Over Age 65 Compared to Those Age 20-64 and Ratio of Residents Over 65 to Residents Age 20-64, Expressed as a Percentage, 2000 and 2020 (Projected)

Geography	Age Group	2000	2020
Wyoming	**20-64**	**290,875**	**292,416**
	65+	**57,786**	**96,962**
	Ratio 65+/20-64 65+/20-64	**19.9%**	**33.2%**
	Total	**494,078**	**533,534**
Albany County	20-64	29,198	26,746
	65+	2,650	4,659
	Ratio 65+/20-64	9.1%	17.4%
	Total	31,848	31,405
Big Horn County	20-64	5,896	5,433
	Old-Old	1,915	2,583
	Ratio 65+/20-64	32.5%	47.5%
	Total	11,424	11,324
Campbell County	20-64	20,611	24,707
	65+	1,789	5,743
	Ratio 65+/20-64	8.7%	23.2%
	Total	33,981	44,595
Carbon County	20-64	9,494	7,955
	65+	1,920	2,585
	Ratio 65+/20-64	20.2%	32.5%
	Total	15,594	13,965
Converse County	20-64	7,018	7,176
	65+	1,345	2,384
	Ratio 65+/20-64	19.2%	33.2%
	Total	12,104	13,392
Crook County	20-64	3,293	3,363
	65+	874	1,340
	Ratio 65+/20-64	26.5%	39.8%
	Total	5,895	6,419
Fremont County	20-64	20,121	19,355
	65+	4,757	7,306
	Ratio 65+/20-64	23.6%	37.7%
	Total	35,841	37,135
Goshen County	20-64	6,866	5,893
	65+	2,172	2,727
	Ratio 65+/20-64	31.6%	46.3%
	Total	12,552	11,596
Hot Springs County	20-64	2,698	2,267
	65+	978	1,149
	Ratio 65+/20-64	36.2%	50.7%
	Total	4,865	4,391

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Table 5.1: Population of Wyoming Residents Over Age 65 Compared to Those Age 20-64 and Ratio of Residents Over 65 to Residents Age 20-64, Expressed as a Percentage, 2000 and 2020 (Projected)

Geography	Age Group	2000	2020
Johnson County	20-64	3,944	4,812
	65+	1,278	2,157
	Ratio 65+/20-64	32.4%	44.8%
	Total	7,108	9,198
Laramie County	20-64	49,028	50,149
	65+	9,355	15,707
	Ratio 65+/20-64	19.1%	31.3%
	Total	81,709	89,268
Lincoln County	20-64	7,885	8,954
	65+	1,814	3,288
	Ratio 65+/20-64	23.0%	36.7%
	Total	14,637	17,868
Natrona County	20-64	38,565	38,215
	65+	8,424	14,477
	Ratio 65+/20-64	21.8%	37.9%
	Total	66,550	72,151
Niobrara County	20-64	1,347	989
	65+	444	476
	Ratio 65+/20-64	33.0%	48.1%
	Total	2,390	1,892
Park County	20-64	14,814	15,407
	65+	3,747	5,966
	Ratio 65+/20-64	25.3%	38.7%
	Total	25,813	28,760
Platte County	20-64	4,877	4,592
	65+	1,442	1,943
	Ratio 65+/20-64	29.6%	42.3%
	Total	8,757	8,760
Sheridan County	20-64	15,320	16,140
	65+	4,121	6,737
	Ratio 65+/20-64	26.9%	41.7%
	Total	26,606	30,336
Sublette County	20-64	3,587	4,614
	65+	719	1,456
	Ratio 65+/20-64	20.0%	31.6%
	Total	5,952	8,135
Sweetwater County	20-64	22,301	18,049
	65+	3,009	4,817
	Ratio 65+/20-64	13.5%	26.7%
	Total	37,487	32,759

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Table 5.1: Population of Wyoming Residents Over Age 65 Compared to Those Age 20-64 and Ratio of Residents Over 65 to Residents Age 20-64, Expressed as a Percentage, 2000 and 2020 (Projected)

Geography	Age Group	2000	2020
Teton County	20-64	13,063	17,917
	65+	1,288	3,542
	Ratio 65+/20-64	9.9%	19.8%
	Total	18,352	26,671
Uinta County	20-64	11,065	9,984
	65+	1,374	2,785
	Ratio 65+/20-64	12.4%	27.9%
	Total	19,705	19,509
Washakie County	20-64	4,483	3,777
	65+	1,323	1,676
	Ratio 65+/20-64	29.5%	44.4%
	Total	8,263	7,501
Weston County	20-64	3,804	3,462
	65+	1,047	1,459
	Ratio 65+/20-64	27.5%	42.1%
	Total	6,642	6,509

Table 5.2: Wyoming Employment, Number of Firms, and Employment Ratio by County and Region,[a] First Quarter 2000 and First Quarter 2007

	First Quarter 2000			First Quarter 2007		
	Employment	Firms	Ratio	Employment	Firms	Ratio
Albany County	13,856	1,042	13.3	15,222	1,177	12.9
Goshen County	3,902	425	9.2	4,236	452	9.4
Niobrara County	801	133	6.0	816	126	6.5
Platte County	3,340	348	9.6	3,313	376	8.8
Southeast Region[a]	**21,899**	**1,948**	**11.2**	**23,587**	**2,131**	**11.1**
Laramie County	**35,354**	**2,512**	**14.1**	**41,593**	**3,076**	**13.5**
Lincoln County	4,775	546	8.7	6,463	794	8.1
Sublette County	1,963	380	5.2	4,868	598	8.1
Teton County	14,695	1,764	8.3	17,307	2,114	8.2
Uinta County	7,647	667	11.5	9,391	795	11.8
Southwest Region[a]	**29,080**	**3,357**	**8.7**	**38,029**	**4,301**	**8.8**
Sweetwater County	**18,333**	**1,262**	**14.5**	**24,116**	**1,645**	**14.7**
Big Horn County	4,013	373	10.8	3,930	402	9.8
Fremont County	13,531	1,377	9.8	15,495	1,546	10.0
Hot Springs County	1,908	228	8.4	1,947	230	8.5
Washakie County	3,527	427	8.3	3,775	463	8.2
Northwest Region[a]	**22,979**	**2,405**	**9.6**	**25,147**	**2,641**	**9.5**
Park County	**10,499**	**1,257**	**8.4**	**11,873**	**1,422**	**8.3**
Crook County	1,802	223	8.1	2,233	292	7.6
Johnson County	2,509	360	7.0	3,232	454	7.1
Sheridan County	10,255	1,137	9.0	12,831	1,383	9.3
Weston County	2,172	247	8.8	2,247	269	8.4
Northeast Region[a]	**16,738**	**1,967**	**8.5**	**20,543**	**2,398**	**8.6**
Campbell County	**17,690**	**1,268**	**14.0**	**26,615**	**1,663**	**16.0**
Carbon County	6,122	654	9.4	7,100	709	10.0
Converse County	4,168	465	9.0	4,714	495	9.5
Central Region[a]	**10,290**	**1,119**	**9.2**	**11,814**	**1,204**	**9.8**
Natrona County	**30,519**	**2,738**	**11.1**	**38,303**	**3,133**	**12.2**
Total	**213,381**	**19,833**	**10.8**	**261,620**	**23,614**	**11.1**

[a]Regional totals include outlying counties only, not regional center.

Note: Shaded rows indicate county selected for this analysis as regional center.

Table 5.3: Wyoming County and Regional Population and Change by Selected Age Groups, 2000 and 2007

	Young (55 and younger)				Young-Old (56-74)				Old-Old (75 and older)				Total			
			Change				Change				Change				Change	
	2000	2007	n	%	2000	2007	n	%	2000	2007	n	%	2000	2007	n	%
Albany County	27,045	26,273	-772	-2.9%	3,559	4,528	969	27.2%	1,244	1,387	143	11.5%	**31,848**	**32,188**	**340**	**1.1%**
Goshen County	9,020	8,281	-739	-8.2%	2,417	2,705	288	11.9%	1,114	1,163	49	4.4%	**12,552**	**12,148**	**-404**	**-3.2%**
Niobrara County	1,652	1,392	-260	-15.7%	536	547	11	2.1%	201	215	14	7.0%	**2,390**	**2,152**	**-238**	**-10.0%**
Platte County	6,308	5,971	-337	-5.3%	1,749	2,005	256	14.6%	700	735	35	5.0%	**8,757**	**8,711**	**-46**	**-0.5%**
Southeast Region[a]	44,025	41,917	-2,108	-4.8%	8,261	9,785	1524	18.4%	3,259	3,500	241	7.4%	**55,547**	**55,199**	**-348**	**-0.6%**
Laramie County	65,298	65,735	437	0.7%	12,070	15,098	3,028	25.1%	4,340	5,153	813	18.7%	**81,708**	**85,986**	**4,278**	**5.2%**
Lincoln County	11,417	11,811	394	3.5%	2,418	3,109	691	28.6%	803	1,003	200	24.9%	**14,637**	**15,925**	**1,288**	**8.8%**
Sublette County	4,577	5,014	437	9.5%	1,087	1,438	351	32.3%	287	364	77	26.8%	**5,952**	**6,815**	**863**	**14.5%**
Teton County	15,523	16,982	1,459	9.4%	2,360	3,273	913	38.7%	467	551	84	18.0%	**18,352**	**20,808**	**2,456**	**13.4%**
Uinta County	16,975	16,360	-615	-3.6%	2,151	2,786	635	29.5%	579	715	136	23.5%	**19,705**	**19,861**	**156**	**0.8%**
Southwest Region[a]	48,492	50,167	1,675	3.5%	8,016	10,606	2590	32.3%	2,136	2,633	497	23.3%	**58,646**	**63,409**	**4,763**	**8.1%**
Sweetwater County	31,521	29,206	-2,315	-7.3%	4,558	5,684	1,126	24.7%	1,410	1,423	13	0.9%	**37,489**	**36,313**	**-1,173**	**-3.1%**
Big Horn County	8,287	7,835	-452	-5.5%	2,177	2,501	324	14.9%	960	991	31	3.2%	**11,424**	**11,327**	**-97**	**-0.8%**
Fremont County	27,428	26,546	-882	-3.2%	6,373	7,487	1,114	17.5%	2,042	2,427	385	18.9%	**35,841**	**36,460**	**619**	**1.7%**
Hot Springs County	3,224	2,863	-361	-11.2%	1,157	1,233	76	6.6%	485	491	6	1.2%	**4,865**	**4,587**	**-278**	**-5.7%**
Washakie County	6,075	5,404	-671	-11.0%	1,554	1,639	85	5.5%	634	692	58	9.1%	**8,263**	**7,734**	**-529**	**-6.4%**
Northwest Region[a]	45,014	42,648	-2,366	-5.3%	11,261	12,860	1,599	14.2%	4,121	4,601	480	11.6%	**60,393**	**60,108**	**-285**	**-0.5%**
Park County	19,286	19,279	-7	0.0%	4,730	5,873	1,143	24.2%	1,796	1,992	196	10.9%	**25,812**	**27,144**	**1,332**	**5.2%**
Crook County	4,335	4,227	-108	-2.5%	1,181	1,421	240	20.3%	377	446	69	18.3%	**5,893**	**6,094**	**201**	**3.4%**
Johnson County	4,947	5,269	322	6.5%	1,568	1,972	404	25.8%	593	697	104	17.5%	**7,108**	**7,938**	**830**	**11.7%**
Sheridan County	19,715	19,893	178	0.9%	4,849	5,846	997	20.6%	2,044	2,350	306	15.0%	**26,608**	**28,089**	**1,481**	**5.6%**
Weston County	4,885	4,635	-250	-5.1%	1,244	1,463	219	17.6%	513	566	53	10.3%	**6,642**	**6,664**	**22**	**0.3%**
Northeast Region[a]	33,882	34,024	142	0.4%	8,842	10,702	1,860	21.0%	3,527	4,059	532	15.1%	**46,251**	**48,785**	**2,534**	**5.5%**
Campbell County	30,049	32,119	2,070	6.9%	3,242	4,987	1,745	53.8%	691	998	307	44.4%	**33,982**	**38,104**	**4,122**	**12.1%**
Carbon County	12,083	11,002	-1,081	-8.9%	2,656	2,999	343	12.9%	854	874	20	2.3%	**15,593**	**14,875**	**-718**	**-4.6%**
Converse County	9,641	9,590	-51	-0.5%	1,913	2,332	419	21.9%	549	698	149	27.1%	**12,103**	**12,620**	**517**	**4.3%**
Central Region[a]	21,724	20,592	-1,132	-5.2%	4,569	5,331	762	16.7%	1,403	1,572	169	12.0%	**27,696**	**27,495**	**-201**	**-0.7%**
Natrona County	52,389	52,239	-150	-0.3%	10,455	12,412	1,957	18.7%	3,705	5,088	1,383	37.3%	**66,549**	**69,739**	**3,190**	**4.8%**

[a]Regional totals include outlying counties only, not regional center.

Note: Shaded rows indicate selected regional center.

Prepared by Wyoming Department of Administration and Information, Economic Analysis Division (http://eadiv.state.wy.us).

Internet Release: October 21, 2004. Contact: Wenlin Liu at 307-777-7504 or wliu@state.wy.us

Table 5.4: Health Care in Wyoming's Southeast Region Not Including Laramie County by Ownership & North American Industry Classification System Code and Title for First Quarter 2000 & 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Gov't	622110 General Medical & Surgical Hospitals	1							
Gov't	621111 Offices of Physicians (except Mental Health)	-1	-100.0%						
Gov't	**Total Health Care (Government)**	**0**	**0.0%**						
Private	621111 Offices of Physicians (except Mental Health)	5	23.8%						
Private	621112 Offices of Physicians, Mental Health Specialists	1							
Private	621210 Offices of Dentists	-2	-10.0%						
Private	621310 Offices of Chiropractors	1	20.0%						
Private	621320 Offices of Optometrists	0	0.0%						
Private	621330 Offices of Mental Health Practitioners (except Physicians)	1	20.0%						
Private	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	3	100.0%						
Private	621391 Offices of Podiatrists	0	0.0%						
Private	621399 Offices of All Other Miscellaneous Health Practitioners	4	200.0%						
Private	621410 Family Planning Centers	0	0.0%						
Private	621420 Outpatient Mental Health & Substance Abuse Centers	0	0.0%						
Private	621511 Medical Laboratories	0	0.0%						
Private	621512 Diagnostic Imaging Centers	0	0.0%						
Private	621610 Home Health Care Services	2	50.0%						
Private	621910 Ambulance Services	0	0.0%						
Private	621991 Blood & Organ Banks	1							
Private	621999 All Other Miscellaneous Ambulatory Health Care Services	1							
Private	621 Ambulatory Health Care Services	17	22.4%	443	80.6%	$4,521,503	90.7%	$39	5.6%
Private	622110 General Medical & Surgical Hospitals	0	0.0%						
Private	623110 Nursing Care Facilities	-1	-50.0%						
Private	623220 Residential Mental Health & Substance Abuse Facilities	0	0.0%						
Private	623311 Continuing Care Retirement Communities	1							
Private	623312 Homes for the Elderly	-2	-50.0%						
Private	623990 Other Residential Care Facilities	2	200.0%						
Private	623 Nursing & Residential Care Facilities	0	0.0%	-56	-11.5%	$217,215	8.7%	$90	22.7%
Private	**Total Health Care (Private)**	**17**	**19.5%**	**326**	**18.1%**	**$4,583,280**	**33.7%**	**$77**	**13.2%**
	Total Health Care (Private and Government)	**17**	**19.3%**	**326**	**17.7%**	**$4,742,656**	**34.1%**	**$81**	**13.9%**
	Total (All Industries)	**183**	**9.4%**	**1,687**	**7.7%**	**$52,093,990**	**43.0%**	**$139**	**32.8%**

Table 5.5: Changes in Health Care in Laramie County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 and First Quarter 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Gov't	622110 General Medical & Surgical Hospitals	0	0.0%						
	Total Health Care (Government)	**0**	**0.0%**						
Private	621111 Offices of Physicians (except Mental Health)	9	17.6%						
	621112 Offices of Physicians, Mental Health Specialists	3							
	621210 Offices of Dentists	1	2.7%						
	621310 Offices of Chiropractors	4	44.4%						
	621320 Offices of Optometrists	3	60.0%						
	621330 Offices of Mental Health Practitioners (except Physicians)	10	500.0%						
	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	-1	-12.5%						
	621391 Offices of Podiatrists	0	0.0%						
	621399 Offices of All Other Miscellaneous Health Practitioners	7	350.0%						
	621420 Outpatient Mental Health & Substance Abuse Centers	0	0.0%						
	621492 Kidney Dialysis Centers	0	0.0%						
	621493 Freestanding Ambulatory Surgical & Emergency Centers	1	100.0%						
	621498 All Other Outpatient Care Centers	-1	-100.0%						
	621511 Medical Laboratories	1	50.0%						
	621512 Diagnostic Imaging Centers	1	100.0%						
	621610 Home Health Care Services	0	0.0%						
	621910 Ambulance Services	0	0.0%						
	621991 Blood & Organ Banks	1	100.0%						
	621999 All Other Miscellaneous Ambulatory Health Care Services	-1	-100.0%						
	621 Ambulatory Health Care Services	38	29.2%	469	22.4%	16,406,770	75.1%	346	43.0%
	622110 General Medical & Surgical Hospitals	0	0.0%						
	623110 Nursing Care Facilities	3	150.0%						
	623210 Residential Mental Retardation Facilities	1							
	623311 Continuing Care Retirement Communities	2							
	623312 Homes for the Elderly	-1	-50.0%						
	623990 Other Residential Care Facilities	4	400.0%						
	623 Nursing & Residential Care Facilities	9	180.0%	$566	166.1%	$4,516,686	316.8%	$182	56.6%
	Total Health Care (Private)	**47**	**35.1%**	**1,346**	**47.4%**	**$19,607,669**	**89.0%**	**$371**	**58.9%**
Total Health Care (Government & Private)		**47**	**34.8%**	**1,445**	**45.1%**	**$24,129,526**	**89.1%**	**$197**	**30.3%**
Total (All Industries)		**564**	**22.5%**	**6,239**	**17.6%**	**$134,485,325**	**58.9%**	**$174**	**35.0%**

Table 5.6: Health Care in Wyoming's Southwest Region Not Including Sweetwater County by Ownership & North American Industry Classification System Code and Title for First Quarter 2000 & 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Gov't	621111 Offices of Physicians (except Mental Health)	1	100.0%						
Gov't	621910 Ambulance Services	3							
Gov't	622110 General Medical & Surgical Hospitals	0	0.0%						
Gov't	622210 Psychiatric & Substance Abuse Hospitals	0	0.0%						
	Total Health Care (Government)	**4**	**133.3%**						
Private	621111 Offices of Physicians (except Mental Health)	7	17.1%						
Private	621112 Offices of Physicians, Mental Health Specialists	1	50.0%						
Private	621210 Offices of Dentists	6	22.2%						
Private	621310 Offices of Chiropractors	4	57.1%						
Private	621320 Offices of Optometrists	0	0.0%						
Private	621330 Offices of Mental Health Practitioners (except Physicians)	0	0.0%						
Private	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	2	28.6%						
Private	621391 Offices of Podiatrists	1	100.0%						
Private	621399 Offices of All Other Miscellaneous Health Practitioners	6	600.0%						
Private	621410 Family Planning Centers	0	0.0%						
Private	621420 Outpatient Mental Health & Substance Abuse Centers	1	25.0%						
Private	621493 Freestanding Ambulatory Surgical & Emergency Centers	2	100.0%						
Private	621498 All Other Outpatient Care Centers	2	200.0%						
Private	621511 Medical Laboratories	2							
Private	621512 Diagnostic Imaging Centers	0	0.0%						
Private	621610 Home Health Care Services	4							
Private	621910 Ambulance Services	1							
Private	621999 All Other Miscellaneous Ambulatory Health Care Services	1							
Private	621 Ambulatory Health Care Services	40	36.7%	276	51.3%	$3,795,389	85.2%	$143	22.4%
Private	622110 General Medical & Surgical Hospitals	0	0.0%						
Private	623110 Nursing Care Facilities	0	0.0%						
Private	623210 Residential Mental Retardation Facilities	0	0.0%						
Private	623220 Residential Mental Health & Substance Abuse Facilities	0	0.0%						
Private	623312 Homes for the Elderly	3	300.0%						
Private	623990 Other Residential Care Facilities	3	100.0%						
Private	623 Nursing & Residential Care Facilities	6	50.0%	168	13.5%	$4,848,135	65.2%	$210	45.6%
	Total Health Care (Private)	**46**	**38.0%**	**443**	**24.9%**	**$8,643,524**	**72.7%**	**$197**	**38.3%**
	Total Health Care (Government & Private)	**50**	**40.3%**	**530**	**22.8%**	**$11,409,879**	**74.7%**	**$214**	**42.2%**
	Total (All Industries)	**944**	**28.1%**	**8,950**	**30.8%**	**$179,851,583**	**95.4%**	**$246**	**49.5%**

Table 5.7: Changes in Health Care in Sweetwater County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 and First Quarter 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Gov't	621111 Offices of Physicians (except Mental Health)	0	0.0%						
Gov't	621420 Outpatient Mental Health & Substance Abuse Centers	0	0.0%						
Gov't	623110 Nursing Care Facilities	0	0.0%						
Gov't	623220 Residential Mental Health & Substance Abuse Facilities	0	0.0%						
Total Health Care (Government)		**0**	**0.0%**						
Private	621111 Offices of Physicians (except Mental Health)	2	10.5%						
Private	621112 Offices of Physicians, Mental Health Specialists	-1	-100.0%						
Private	621210 Offices of Dentists	-1	-5.6%						
Private	621310 Offices of Chiropractors	3	75.0%						
Private	621320 Offices of Optometrists	0	0.0%						
Private	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	2	66.7%						
Private	621391 Offices of Podiatrists	0	0.0%						
Private	621399 Offices of All Other Miscellaneous Health Practitioners	3							
Private	621410 Family Planning Centers	0	0.0%						
Private	621493 Freestanding Ambulatory Surgical & Emergency Centers	1							
Private	621511 Medical Laboratories	2							
Private	621512 Diagnostic Imaging Centers	1							
Private	621610 Home Health Care Services	-1	-33.3%						
Private	621910 Ambulance Services	1							
Private	621991 Blood & Organ Banks	0	0.0%						
Private	621999 All Other Miscellaneous Ambulatory Health Care Services	0	0.0%						
Private	621 Ambulatory Health Care Services	12	19.4%	80	21.7%	1,251,034	45.0%	$111	19.2%
Private	622110 General Medical & Surgical Hospitals	0	0.0%						
Private	623110 Nursing Care Facilities	1							
Private	623312 Homes for the Elderly	-1	-100.0%						
Private	623990 Other Residential Care Facilities	0	0.0%						
Private	623 Nursing & Residential Care Facilities	0	0.0%	59	190.3%	342,379	338.9%	$128	51.2%
Total Health Care (Private)		**12**	**18.5%**	**106**	**13.9%**	**1,859,520**	**32.9%**	**$269**	**44.9%**
Total Health Care (Government & Private)		**12**	**16.0%**	**152**	**14.9%**	**$2,556,782**	**35.2%**	**$97**	**17.7%**
Total (All Industries)		**383**	**30.3%**	**5,783**	**31.5%**	**$121,639,752**	**75.7%**	**$226**	**33.5%**

Table 5.8: Changes in Health Care in Wyoming's Northwest Region Not Including Park County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 and First Quarter 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Gov't	623110 Nursing Care Facilities	0	0.0%						
Gov't	623210 Residential Mental Retardation Facilities	0	0.0%						
Gov't	623311 Continuing Care Retirement Communities	0	0.0%						
	Total Health Care (Government)	**0**	**0.0%**						
Private	621111 Offices of Physicians (except Mental Health)	2	5.0%						
Private	621210 Offices of Dentists	-2	-9.5%						
Private	621310 Offices of Chiropractors	4	57.1%						
Private	621320 Offices of Optometrists	0	0.0%						
Private	621330 Offices of Mental Health Practitioners (except Physicians)	1	100.0%						
Private	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	3	42.9%						
Private	621391 Offices of Podiatrists	0	0.0%						
Private	621399 Offices of All Other Miscellaneous Health Practitioners	1	50.0%						
Private	621410 Family Planning Centers	0	0.0%						
Private	621420 Outpatient Mental Health & Substance Abuse Centers	1	100.0%						
Private	621493 Freestanding Ambulatory Surgical & Emergency Centers	1							
Private	621511 Medical Laboratories	0	0.0%						
Private	621610 Home Health Care Services	-1	-50.0%						
Private	621 Ambulatory Health Care Services	10	10.6%	116	21.1%	$2,702,223	69.9%	$218	40.3%
Private	622110 General Medical & Surgical Hospitals	0	0.0%						
Private	623110 Nursing Care Facilities	1	25.0%						
Private	623220 Residential Mental Health & Substance Abuse Facilities	1							
Private	623312 Homes for the Elderly	0	0.0%						
Private	623990 Other Residential Care Facilities	-1	-25.0%						
Private	623 Nursing & Residential Care Facilities	1	9.1%	119	22.3%	$1,478,436	67.9%	$117	37.3%
	Total Health Care (Private)	**11**	**10.0%**	**143**	**6.9%**	**$7,235,413**	**59.0%**	**$223**	**48.7%**
	Total Health Care (Government & Private)	**11**	**9.6%**	**75**	**2.7%**	**$8,142,613**	**49.8%**	**$211**	**45.8%**
	Total (All Industries)	**236**	**9.8%**	**2,168**	**9.4%**	**$65,978,335**	**51.3%**	**$165**	**38.2%**

Table 5.9: Changes in Health Care in Park County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 and First Quarter 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Private	621111 Offices of Physicians (except Mental Health)	-1	-4.5%						
	621210 Offices of Dentists	1	8.3%						
	621310 Offices of Chiropractors	0	0.0%						
	621320 Offices of Optometrists	1	20.0%						
	621330 Offices of Mental Health Practitioners (except Physicians)	1	100.0%						
	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	2	66.7%						
	621391 Offices of Podiatrists	0	0.0%						
	621399 Offices of All Other Miscellaneous Health Practitioners	1	100.0%						
	621410 Family Planning Centers	0	0.0%						
	621420 Outpatient Mental Health & Substance Abuse Centers	1	100.0%						
	621493 Freestanding Ambulatory Surgical & Emergency Centers	1							
	621498 All Other Outpatient Care Centers	0	0.0%						
	621511 Medical Laboratories	0	0.0%						
	621512 Diagnostic Imaging Centers	1							
	621610 Home Health Care Services	0	0.0%						
	621 Ambulatory Health Care Services	8	14.3%	142	45.3%	1,707,713	65.8%	90	14.1%
	622110 General Medical & Surgical Hospitals	-1	-50.0%						
	622210 Psychiatric & Substance Abuse Hospitals	2							
	623311 Continuing Care Retirement Communities	1							
	623312 Homes for the Elderly	-1	-25.0%						
	623990 Other Residential Care Facilities	4							
	623 Nursing & Residential Care Facilities	4	100.0%	73	283.1%	400,364	542.4%	150	67.7%
	Total Health Care	**13**	**21.0%**	**333**	**30.1%**	**$5,671,138**	**79.5%**	**$241**	**46.8%**
Total (All Industries)		**165**	**13.1%**	**1,374**	**13.1%**	**$40,160,037**	**68.1%**	**$210**	**48.6%**

Table 5.10: Health Care in Wyoming's Northeast Region Not Including Campbell County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 & 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Gov't	622110 General Medical & Surgical Hospitals	0	0.0%						
Gov't	622210 Psychiatric & Substance Abuse Hospitals	0	0.0%						
Gov't	623311 Continuing Care Retirement Communities	0	0.0%						
	Total Health Care (Government)	**0**	**0.0%**						
Private	621111 Offices of Physicians (except Mental Health)	3	9.7%						
Private	621112 Offices of Physicians, Mental Health Specialists	1	100.0%						
Private	621210 Offices of Dentists	4	21.1%						
Private	621310 Offices of Chiropractors	1	20.0%						
Private	621320 Offices of Optometrists	1	20.0%						
Private	621330 Offices of Mental Health Practitioners (except Physicians)	1	100.0%						
Private	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	3	60.0%						
Private	621391 Offices of Podiatrists	0	0.0%						
Private	621399 Offices of All Other Miscellaneous Health Practitioners	2							
Private	621420 Outpatient Mental Health & Substance Abuse Centers	0	0.0%						
Private	621493 Freestanding Ambulatory Surgical & Emergency Centers	1							
Private	621498 All Other Outpatient Care Centers	-1	-50.0%						
Private	621511 Medical Laboratories	0	0.0%						
Private	621610 Home Health Care Services	1	50.0%						
Private	621910 Ambulance Services	2							
Private	621 Ambulatory Health Care Services	19	23.8%	211	48.3%	$2,744,522	82.5%	$135	23.1%
Private	622110 General Medical & Surgical Hospitals	0	0.0%						
Private	623110 Nursing Care Facilities	0	0.0%						
Private	623210 Residential Mental Retardation Facilities	0	0.0%						
Private	623220 Residential Mental Health & Substance Abuse Facilities	-1	-33.3%						
Private	623312 Homes for the Elderly	1	25.0%						
Private	623990 Other Residential Care Facilities	0	0.0%						
Private	623 Nursing & Residential Care Facilities	0	0.0%	52	12.4%	$1,346,073	70.6%	$183	51.7%
Private	**Total Health Care (Private)**	**19**	**20.2%**	**287**	**19.2%**	**$6,708,472**	**74.7%**	**$215**	**46.5%**
	Total Health Care (Government & Private)	**19**	**19.6%**	**372**	**17.7%**	**$9,563,549**	**59.6%**	**$209**	**35.6%**
	Total (All Industries)	**431**	**21.9%**	**3,804**	**22.7%**	**$70,870,062**	**74.7%**	**$185**	**42.4%**

Table 5.11: Changes in Health Care in Campbell County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 and First Quarter 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Gov't	621420 Outpatient Mental Health & Substance Abuse Centers	1							
	Total Health Care (Government)	**1**							
Private	621111 Offices of Physicians (except Mental Health)	2	9.1%						
	621112 Offices of Physicians, Mental Health Specialists	-1	-100.0%						
	621210 Offices of Dentists	0	0.0%						
	621310 Offices of Chiropractors	1	25.0%						
	621320 Offices of Optometrists	-1	-25.0%						
	621330 Offices of Mental Health Practitioners (except Physicians)	-1	-100.0%						
	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	5							
	621410 Family Planning Centers	0	0.0%						
	621493 Freestanding Ambulatory Surgical & Emergency Centers	1	100.0%						
	621511 Medical Laboratories	2							
	621610 Home Health Care Services	-1	-50.0%						
	621 Ambulatory Health Care Services	7	15.6%	173	58.3%	2,675,119	100.7%	185	26.8%
	622110 General Medical & Surgical Hospitals	0	0.0%						
	623110 Nursing Care Facilities	0	0.0%						
	623210 Residential Mental Retardation Facilities	0	0.0%						
	623311 Continuing Care Retirement Communities	0	0.0%						
	623312 Homes for the Elderly	1							
	623990 Other Residential Care Facilities	0	0.0%						
	623 Nursing & Residential Care Facilities	1	25.0%	-6	-2.4%	796,205	77.4%	$254	81.7%
	Total Health Care (Private)	**8**	**16.0%**	**339**	**32.4%**	**$7,974,834**	**112.8%**	**$353**	**55.2%**
Total Health Care (Government & Private)		**9**	**18.0%**	**346**	**33.1%**	**$8,029,416**	**113.6%**	**$315**	**60.5%**
Total (All Industries)		**395**	**31.2%**	**8,925**	**50.5%**	**$178,615,219**	**121.8%**	**$302**	**47.3%**

Table 5.12: Changes in Health Care in Wyoming's Central Region Not Including Natrona County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 and First Quarter 2007

		North American Industry Classification System Code & Title	Change in Firms n	Change in Firms %	Change in Average Employment n	Change in Average Employment %	Change in Total Wages $	Change in Total Wages %	Change in Average Weekly Wage $	Change in Average Weekly Wage %
	Gov't	621111 Offices of Physicians (except Mental Health)	0	0.0%						
	Gov't	621511 Medical Laboratories	0	0.0%						
	Total Health Care (Government)		**0**	**0.0%**						
	Private	621111 Offices of Physicians (except Mental Health)	-5	-29.4%						
	Private	621112 Offices of Physicians, Mental Health Specialists	-1	-100.0%						
	Private	621210 Offices of Dentists	1	11.1%						
	Private	621310 Offices of Chiropractors	-1	-50.0%						
	Private	621320 Offices of Optometrists	0	0.0%						
	Private	621330 Offices of Mental Health Practitioners (except Physicians)	3							
	Private	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	0	0.0%						
	Private	621399 Offices of All Other Miscellaneous Health Practitioners	2							
	Private	621410 Family Planning Centers	0	0.0%						
	Private	621420 Outpatient Mental Health & Substance Abuse Centers	0	0.0%						
	Private	621493 Freestanding Ambulatory Surgical & Emergency Centers	1							
	Private	621511 Medical Laboratories	1							
	Private	621512 Diagnostic Imaging Centers	0	0.0%						
	Private	621610 Home Health Care Services	1							
	Private	621910 Ambulance Services	0	0.0%						
	Private	621 Ambulatory Health Care Services	2	5.3%	55	24.6%	$1,328,708	84.1%	$261	47.7%
	Private	622110 General Medical & Surgical Hospitals	0	0.0%						
	Private	623110 Nursing Care Facilities	0	0.0%						
	Private	623312 Homes for the Elderly	-1	-100.0%						
	Private	623220 Residential Mental Health & Substance Abuse Facilities	1							
	Private	623990 Other Residential Care Facilities	0	0.0%						
	Private	623 Nursing & Residential Care Facilities	0	0.0%	-17	-8.6%	$312,698	48.0%	$158	62.0%
	Total Health Care (Private)		**2**	**4.3%**	**132**	**16.9%**	**$4,173,728**	**83.4%**	**$281**	**56.8%**
Total Health Care (Government & Private)			**2**	**4.1%**	**128**	**16.1%**	**$4,181,118**	**81.9%**	**$280**	**56.7%**
Total (All Industries)			**85**	**7.6%**	**1,525**	**14.8%**	**$39,681,176**	**61.9%**	**$197**	**41.0%**

Table 5.13: Changes in Health Care in Natrona County by Ownership and North American Industry Classification System Code and Title for First Quarter 2000 and First Quarter 2007

		Change in Firms		Change in Average Employment		Change in Total Wages		Change in Average Weekly Wage	
	North American Industry Classification System Code & Title	n	%	n	%	$	%	$	%
Private	621111 Offices of Physicians (except Mental Health)	0	0.0%						
	621112 Offices of Physicians, Mental Health Specialists	-1	-33.3%						
	621210 Offices of Dentists	2	5.7%						
	621310 Offices of Chiropractors	2	33.3%						
	621320 Offices of Optometrists	4	50.0%						
	621330 Offices of Mental Health Practitioners (except Physicians)	3	60.0%						
	621340 Offices of Physical, Occ. & Speech Therapists, & Audiologists	4	66.7%						
	621391 Offices of Podiatrists	0	0.0%						
	621399 Offices of All Other Miscellaneous Health Practitioners	1	100.0%						
	621410 Family Planning Centers	0	0.0%						
	621420 Outpatient Mental Health & Substance Abuse Centers	1	100.0%						
	621492 Kidney Dialysis Centers	-1	-50.0%						
	621493 Freestanding Ambulatory Surgical & Emergency Centers	2	200.0%						
	621498 All Other Outpatient Care Centers	2							
	621511 Medical Laboratories	0	0.0%						
	621512 Diagnostic Imaging Centers	1	50.0%						
	621610 Home Health Care Services	-2	-40.0%						
	621910 Ambulance Services	0	0.0%						
	621991 Blood & Organ Banks	1	33.3%						
	621999 All Other Miscellaneous Ambulatory Health Care Services	4	200.0%						
	621 Ambulatory Health Care Services	23	15.5%	579	53.8%	$11,060,377	124.1%	$291	45.6%
	622110 General Medical & Surgical Hospitals	0	0.0%						
	622210 Psychiatric & Substance Abuse Hospitals	0	0.0%						
	623110 Nursing Care Facilities	-1	-20.0%						
	623210 Residential Mental Retardation Facilities	-1	-100.0%						
	623220 Residential Mental Health & Substance Abuse Facilities	0	0.0%						
	623311 Continuing Care Retirement Communities	2	200.0%						
	623312 Homes for the Elderly	1	100.0%						
	623990 Other Residential Care Facilities	1	25.0%						
	623 Nursing & Residential Care Facilities	2	15.4%	57	7.2%	$2,094,247	55.4%	$165	44.9%
	Total Health Care (Private)	**25**	**15.3%**	**716**	**22.9%**	**$19,181,455**	**84.4%**	**$239**	**41.2%**
	Total Health Care (Government & Private)	**48**	**15.4%**	**1,295**	**30.8%**	**$30,241,832**	**95.6%**	**$287**	**49.5%**
Total (All Industries)		**395**	**14.4%**	**7,784**	**25.5%**	**$179,120,330**	**90.0%**	**$258**	**51.5%**

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or other Research & Planning projects,
call (307) 473-3807
or e-mail to doeerd_r&p_web@state.wy.us