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**THE CONTRIBUTION OF HOSPITALS  
TO THE NEVADA ECONOMY**

**UNIVERSITY OF NEVADA, RENO**



# **The Contribution of Hospitals to the Nevada Economy**

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# **The Contribution of Hospitals to the Nevada Economy**

## **I. INTRODUCTION**

The analysis presented in this report reveals that Nevada's hospitals have a substantial impact on the state's economy – a contribution often overlooked in public policy discussions of health care costs, access to care, community benefits, and hospital profits and losses. Hospitals play an important role in local and regional economic development by generating employment and income in other businesses in the state. Nevada hospitals continue to provide a considerable amount of uncompensated or free care to Nevada residents. Hospitals also train and employ physicians and other health care workers, resulting in additional contributions to population health and economic well being in Nevada. Finally, the hospital sector's investment in high technology and new construction continues to generate additional income and employment for the state's economy. As state policymakers consider medical and health care priorities for Nevada, they should bear in mind the importance of hospitals to the state's economy. As this report demonstrates, Nevada hospitals provide much more than necessary medical care services – the jobs, income, and economic benefits created by the hospital sector are immense.

The primary purpose of this report is to document the economic contribution of Nevada's hospitals to the state's economy. The report specifically examines: (1) hospital and health-sector economic trends in employment and payroll for Nevada and the United States; (2) selected economic statistics for Nevada hospitals, including data on revenue and expenses, hospital profits, and uncompensated care; (3) the economic impact of hospital operating activities on income and employment in Nevada; and (4) the economic impact of hospital construction on income and employment in Nevada.

Hospitals play a critical role in local and regional economic development by creating jobs and

payroll in other businesses in the economy through normal operating activities, as well as hospital construction. Utilizing the most current Bureau of Economic Analysis (BEA) data available, the analysis presented in this report indicates that Nevada hospitals employed 24,706 individuals in 2002. When the employment created by other businesses as a result of hospital operating activity is included in the analysis, the Nevada hospital industry directly and indirectly generated a total of 43,895 jobs in the state. Similarly, Nevada hospitals generated \$995 million in payroll for the year 2002. When the income created by other businesses as a result of hospital operating activity is included in the analysis, the Nevada hospital industry was responsible for \$1.5 billion in payroll for state hospitals and other businesses.

The report concludes with a discussion of the growing demand for hospital services associated with projected population growth and the elderly in Nevada, and projected employment growth in the hospital sector in Nevada. Employment projections prepared by the Nevada Department of Employment, Training and Rehabilitation indicate that the hospital industry and health care sector in Nevada will continue to exhibit robust employment growth through the end of the decade – in many cases, average annual growth rates in excess of the average for all industries in Nevada. Rapid population growth and an aging population in all regions of the state will continue to fuel a growing demand for health care and hospital services for the foreseeable future. In conclusion, the hospital sector has been and will continue to be a major player in future economic development and the generation of new economic opportunities in the state of Nevada.

This report – *The Contributions of Hospitals to the Nevada Economy* – was undertaken by Dr. Tom Harris, Professor and Director of the Economic Development Center at the University of Nevada Reno, and Dr. John Packham, Health Policy Analyst and Program Director, Center for Education and Health Services Outreach, University of Nevada School of Medicine. Utilizing an economic impact model developed specifically for the health care industry, the report examines the direct economic contribution of hospitals operations and construction, as well as the indirect or secondary income and employment impacts created as a secondary effect of hospital operating activity and construction. The jobs and income generated in other businesses are estimated with employment and income multipliers derived for Nevada.

## II. TRENDS IN THE HEALTH CARE INDUSTRY

### A. National Health Care Industry Trends

The health care sector is a large and fast growing sector of the national economy. Data presented in Table 1 highlight the growth of spending on health care and hospital services in the United States over the past decade, as well as projected growth through 2014. From 1993 to 2003, spending on health care doubled and per capita health expenditures grew from 13.4% to 15.3% of Gross Domestic Product (GDP). During the same period, spending on hospital care rose from \$320 billion to \$515.9 billion. While recent annual growth rates have been modest as compared to the double-digit increases seen in the 1990s, the percent of national economic expenditures on hospital services and health care continues to grow.

**Table 1 – National Health Expenditures and Hospital Care Expenditures for Selected Calendar Years 1993 to 2014**

SPENDING CATEGORY	1993	1998	2002	2003	2004	2005	2006	2014
<b>National Health Expenditures</b>								
NHE (billions)	\$881	\$1,151	\$1,559	\$1,679	\$1,805	\$1,937	\$2,078	\$3,586
Real NHE (billions)	\$1,009	\$1,193	\$1,498	\$1,583	\$1,666	\$1,753	\$1,843	\$2,624
NHE per Capita	\$3,354	\$4,098	\$5,317	\$5,671	\$6,040	\$6,423	\$6,830	\$11,046
NHE as Percent of GDP	13.4%	13.2%	14.9%	15.3%	15.4%	15.6%	16.0%	18.7%
NHE Annual Growth	11.5%	5.3%	7.9%	7.7%	7.5%	7.3%	7.3%	7.1%
<b>Hospital Care Expenditures</b>								
Hospital Care (billions)	\$320.0	\$378.5	\$484.2	\$515.9	\$551.8	\$588.6	\$623.5	\$1,007.2
Hospital Care per Capita	\$1,209	\$1,348	\$1,651	\$1,742	\$1,847	\$1,952	\$2,050	\$3,103
Hospital Care as Percent of GDP	4.8%	4.3%	4.6%	4.7%	4.7%	4.8%	4.8%	5.3%
Hospital Care Annual Growth	11.2%	3.4%	6.3%	6.5%	7.0%	6.7%	5.9%	6.2%
Chain-weighted GDP Index	0.88	0.96	1.04	1.06	1.08	1.11	1.13	1.37

Source: Heffler, S., et al. (2005). Notes: Figures for years 2004 to 2014 are estimated. Annual growth rates are calculated for the previous calendar year.

Over the next decade, health care expenditures in the United States are projected to increase from \$1.8 trillion dollars or 15.4% of GDP in 2004 to \$3.6 trillion dollars or 18.7% of GDP. Similarly, spending on hospital care is projected to increase from an estimated \$551.8 billion or 4.7% of GDP in 2004 to over \$1 trillion in 2014 or 5.3% of GDP. In general, spending on hospital and health care sectors will continue to grow over the course of the next decade and remain higher than nominal GDP growth for the entire economy.

The health sector has been a major source of employment growth in the United States for the past thirty years. Table 2 examines national health sector employment trends over the past three decades utilizing BEA data categorized according to North American Industry Classification

**Table 2 – National Health Sector Employment for Selected Calendar Years, 1970 to 2002**

<b>EMPLOYMENT CATEGORY</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>Health Services Sector</b>						
Health Sector Employment (thousands)	2,902	5,258	8,811	12,172	12,493	12,809
Change from Previous Date (%)	N/A	81.2%	67.6%	38.2%	2.6%	2.5%
<b>Hospital Sector (NAICS 622)</b>						
Hospital Employment (thousands)	743	2,673	4,325	5,015	5,085	5,122
Change from Previous Date (%)	N/A	259.3%	61.8%	16.0%	1.4%	0.7%
<b>General Medical and Surgical Hospitals (NAICS 6221)</b>						
General Hospital Employment (thousands)	N/A	N/A	N/A	4,624	4,680	4,714
Change from Previous Date (%)	N/A	N/A	N/A	N/A	1.2%	0.7%
<b>All Industries</b>						
All Industries – Employment (thousands)	57,265	74,836	93,476	114,065	115,061	112,401
Change from Previous Date (%)	N/A	30.7%	24.9%	22.0%	0.9%	- 2.3%

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005). Notes: Data from 1998 to 2002 were collected according to a reformulated NAICS (North American Industrial Classification System) industry codes for the health sector. NAICS 622 includes all types of hospitals, i.e., both general and speciality hospitals. NAICS 6621 refers only to general medical and surgical hospitals. The classification system did not differentiate general from specialty hospitals prior to 2001.

System (NAICS). Data presented in this and subsequent tables present data in two important components of the health services sector: (1) all hospitals (NAICS 622), which includes both general medical and surgical hospitals, and speciality hospitals (e.g., psychiatric hospitals, rehabilitation hospitals); and (2) general medical and surgical hospitals (NAICS 6221), the largest subset of the overall hospital sector. Between 1970 and 2002, overall health sector employment has grown by nearly 10 million jobs or 341%. Similarly, hospital employment grew by 4.4 million jobs or 589%. Both hospital employment and overall health sector employment growth have outpaced employment growth for all industries in the United States over the past three decades (96%).

**Table 3 – Employment and Payroll in Health Services in Nevada,  
Selected Calendar Years 1970 to 2000**

CATEGORY	1970	1980	1990	2000	CHANGE 1970 to 2000		Average Annual Change
					Number	Percent	
<b>Health Services Industry</b>							
Employment	4,218	13,038	28,664	57,628	53,410	1,266%	9.11%
Nominal Payroll (thousands)	\$24,544	\$240,186	\$926,214	\$2,208,338	\$2,183,794	8,898%	16.18%
Real Payroll (thousands)	\$89,141	\$444,435	\$1,135,205	\$2,208,338	\$2,119,197	2,377%	11.29%
Real Wage per Job	\$21,134	\$34,087	\$39,603	\$38,321	\$17,187	81.32%	N/A
<b>Hospital Sector (NAICS 622)</b>							
Employment	2,041	5,164	11,113	21,737	19,696	965%	8.20%
Nominal Payroll (thousands)	\$11,256	\$83,566	\$294,784	\$772,906	\$761,650	6,767%	15.14%
Real Payroll (thousands)	\$40,880	\$154,629	\$361,299	\$772,906	\$732,026	1,791%	10.05%
Real Wage per Job	\$20,029	\$29,943	\$32,511	\$33,677	\$13,648	68.14%	N/A
GDP Price Deflator	0.27534	0.54043	0.8159	1.0	—	—	—

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005).

## **B. Nevada Health Care Industry Trends**

Table 3 highlights health services sector and hospital payroll and employment trends in Nevada over the past three decades, utilizing data collected by the Bureau of Economic Analysis (BEA) for selected calendar years 1970 to 2000. From 1970 to 2000, employment in health services in Nevada grew by 53,410 jobs and real payroll increased from approximately \$89 million to \$2.2 billion (2000 dollars). During the same period, employment in the hospital sector grew by nearly a factor of 10 to 21,737 jobs and real payroll increased by \$732 million. Table 3 also illustrates the significant gains in real wages in health services industry and the hospital sector in Nevada over the past thirty years. From 1970 to 2000, the real wage per job in the hospital sector increased by \$13,648 or 68% to \$33,677. For the past three decades, average annual payroll growth in the hospital sector was 10% and average annual growth in employment in the hospital sector was over 8%. In general, payroll and employment in Nevada hospitals have grown consistently over the past thirty years.

Data on recent employment and payroll growth in health care and hospitals in Nevada are presented in Table 4. This table utilizes BEA data categorized according to North American Industry Classification System (NAICS) industry codes for the period 2000 to 2002: (1) all hospitals in Nevada (NAICS 622) and (2) general medical and surgical hospitals (NAICS 6221), the largest subset of the hospital sector in Nevada. From 2000 to 2002, overall hospital employment in Nevada grew by 2,969 jobs or 13.7%. Overall hospital payroll grew in real terms by nearly \$13.5 million. Most of the income and employment growth was a result of increased demand for general medical and surgical hospital services in Nevada. During the period 2000 to 2002, employment growth in general medical and surgical hospitals increased by 3,337 jobs or 16.6%. Real payroll in general and medical surgical hospitals grew at an even faster rate of 17.4% or by \$126 million (2000 dollars) over the same two-year period. These data suggest that employment growth in the hospital sector has been accompanied by the growth of disproportionately better paying jobs. In general, recent employment and payroll growth in Nevada's hospital industry has been robust, even during the economic downturn that followed the events of 9/11.

**Table 4 – Employment and Payroll in Health Services in Nevada,  
Selected Calendar Years 2000 to 2002**

CATEGORY	2000	2001	2002	CHANGE 2000 to 2002	
				Number	Percent
<b>Health Services Industry</b>					
Employment	57,628	62,296	64,691	7,063	12.3%
Nominal Payroll (thousands)	\$2,208,338	\$2,483,034	\$2,637,077	\$428,739	19.4%
Real Payroll (thousands)	\$2,208,338	\$2,424,862	\$2,533,410	\$325,072	14.7%
Real Wage per Job	\$38,321	\$38,925	\$39,162	\$841	2.2%
<b>Hospital Sector (NAICS 622)</b>					
Employment	21,737	23,562	24,706	2,969	13.7%
Nominal Payroll (thousands)	\$772,906	\$887,009	\$944,776	\$171,870	22.2%
Real Payroll (thousands)	\$772,906	\$866,228	\$907,635	\$134,729	17.4%
Real Wage per Job	\$35,557	\$36,746	\$36,737	\$1,180	3.3%
<b>General Medical and Surgical Hospitals (NAICS 6221)</b>					
Employment	20,068	21,890	23,045	3,337	16.6%
Nominal Payroll (thousands)	\$724,981	\$833,398	\$885,783	\$160,802	22.2%
Real Payroll (thousands)	\$724,981	\$813,873	\$850,962	\$125,981	17.4%
Real Wage per Job	\$36,126	\$37,180	\$36,926	\$800	2.2%
GDP Price Deflator	1.0	1.02399	1.04092	N/A	N/A

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005).

Utilizing data from the same Bureau of Economic Analysis (BEA) data set, Table 5 presents comparative industry-level data on employment and payroll in Nevada for 2002. The “Health Care and Social Assistance” industry – which includes hospitals, ambulatory health care services, nursing and residential care facilities, and social assistance services – employed 81,006 Nevadans in 2002 or 6.2% of the state’s workforce. The same industry generated approximately \$3.6 million in wages and salary or 5.4% of the total income for the state in 2002. As a percent of statewide employment, the health care and social services industry ranked fourth among Nevada private-sector industries behind “Accommodations and Food Services” (21.3%), “Retail Trade”

**Table 5 – Employment and Income from Employment by Major Industry (NAICS) in Nevada, 2002**

INDUSTRY CATEGORY (NAICS) AND TYPE OF EMPLOYMENT	EMPLOYMENT			INCOME FROM EMPLOYMENT (Wages and Salary)		
	Number	Percent of Total Jobs	Percent of Private Jobs	Amount (\$Thousands)	Percent of Total Income	Percent of Private Income
<b>Total Employment – Nevada</b>	<b>1,301,693</b>	<b>100.00%</b>	<b>N/A</b>	<b>\$51,037,179</b>	<b>76.7%</b>	<b>N/A</b>
Farm Employment	5,034	0.4%	N/A	82,735	0.1%	N/A
Government and Government Enterprises	140,359	10.8%	N/A	7,523,748	11.3%	N/A
Private Employment	1,156,300	88.8%	100.0%	43,430,696	65.3%	100.0%
– Accommodation and Food Services	277,829	21.3%	24.0%	8,626,847	13.0%	19.9%
– Retail Trade	140,008	10.8%	12.1%	4,013,872	6.0%	9.2%
– Construction	108,413	8.3%	9.4%	5,328,960	8.0%	12.3%
– <b>Health Care and Social Assistance, inc Hospitals</b>	<b>81,006</b>	<b>6.2%</b>	<b>7.0%</b>	<b>3,621,010</b>	<b>5.4%</b>	<b>8.3%</b>
– Administrative and Waste Services	80,672	6.2%	7.0%	2,063,984	3.1%	4.8%
– Professional and Technical Services	66,518	5.1%	5.8%	3,484,771	5.2%	8.0%
– Finance and Insurance	63,926	4.9%	5.5%	3,175,487	4.8%	7.3%
– Real Estate, Rental, and Leasing	62,469	4.8%	5.4%	1,413,681	2.1%	3.3%
– Other Services, except Public Administration	52,008	4.0%	4.5%	1,172,778	1.8%	2.7%
– Manufacturing	46,017	3.5%	4.0%	2,371,489	3.6%	5.5%
– Arts, Entertainment, and Food Services	43,691	3.4%	3.8%	1,037,142	1.6%	2.4%
– Transportation and Warehousing	42,155	3.2%	3.7%	1,618,524	2.4%	3.7%
– Wholesale Trade	38,389	3.0%	2.5%	2,057,647	3.1%	4.7%
– Information	19,700	1.5%	1.7%	1,124,025	1.7%	2.6%
– Forestry, Fishing, and Mining	12,734	1.0%	1.1%	783,995	1.2%	1.8%
– Management of Companies and Enterprises	9,061	0.7%	0.8%	890,159	1.3%	2.1%
– Educational Services	6,546	0.5%	0.6%	150,726	0.2%	0.4%
– Utilities	5,159	0.4%	0.5%	495,599	0.7%	1.1%

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005). Notes: Income from dividends, rents, interest, and transfer payments account for the difference between “Total Income” and “Income from Employment.” “Government and Government Enterprises” includes a wide-range of publicly-owned health care facilities, such as county-owned hospitals, district hospitals, and federally-operated facilities on military bases and within the Veterans Administration.

(10.8%) and “Construction” (8.3%). In terms of the percentage share of statewide income, the health care and social services industry also ranked fourth among Nevada private-sector industries behind “Accommodations and Food Services” (13.0%), “Construction” (8.0%), and “Retail Trade” (6.0%). Moreover, the health services and social assistance sector accounted for 7.0% of employment and 8.3% of payroll in private-sector industries. In general, these data highlight the significant and growing importance of hospital and health care employment and payroll in the state’s economy.

**Table 6 – Employment Change in the Health Sector in Nevada, Estimated 2002 to Projected 2012**

EMPLOYMENT SETTING	ESTIMATED NUMBER EMPLOYED		CHANGE – 2002 to 2012		Average Annual Growth
	2002	2012	Number	Percent	
Hospitals	25,949	37,066	11,117	42.8%	3.6%
Home Health Care Services	14,834	21,259	6,425	43.3%	4.3%
Nursing and Residential Care Facilities	9,141	13,453	4,312	47.2%	3.9%
Offices of Dentists	5,634	8,104	2,470	43.8%	3.5%
Offices of Other Health Care Practitioners	3,621	4,790	1,169	32.3%	2.8%
Offices of Physicians	14,834	21,259	6,425	43.3%	3.7%
Other Ambulatory Health Care Services	1,655	2,292	637	38.5%	3.3%
Outpatient Care Centers	2,684	3,796	1,112	41.4%	3.5%
Psychiatric and Substance Abuse Hospitals	531	710	179	33.7%	2.9%
<b>Total – All Health Services in Nevada</b>	<b>78,883</b>	<b>112,729</b>	<b>33,846</b>	<b>42.9%</b>	<b>3.6%</b>
<b>Total– All Industries in Nevada</b>	<b>1,174,930</b>	<b>1,653,555</b>	<b>478,625</b>	<b>40.7%</b>	<b>3.5%</b>

Source: Nevada Department of Employment, Training, and Rehabilitation (DETR). 2004. The estimates provided in this table differ from data presented elsewhere in this report due to different sampling methodologies and units of analysis.

Hospital and other health service employment in Nevada is projected to grow considerably over the next decade. Table 6 provides estimates of the project growth in employment in Nevada hospitals and other health care settings from the Nevada Department of Employment, Training,

and Rehabilitation (DETR). Hospital employment is projected to increase by 11,117 jobs or 43% through the year 2012. For the same period, annual growth in both hospital employment and all health service settings combined will average 3.6% per year, which is slightly higher than the projected annual job growth for all industries in Nevada. Projected hospital employment mirrors estimates for other health care sectors – robust anticipated growth which is being fueled by population growth and aging across the state, and the associated demand for a wide-range of hospital and health care services in Nevada. In general, Nevada hospitals will continue to generate significant increases in well-paying jobs and associated economic activity for the next decade.

**Table 7 – Estimated Population and Population Growth  
in Nevada, 2004 to 2014**

REGION	ESTIMATED POPULATION			POPULATION CHANGE – 2004 to 2014	
	2004	2009	2014	Number	Percent
Urban South	1,686,827	1,999,250	2,277,967	591,140	35.0%
Urban North	435,298	467,967	498,739	63,441	14.6%
Rural and Frontier	250,781	268,367	285,003	34,222	13.7%
Total – Nevada	2,372,906	2,735,584	3,061,709	688,803	29.0%

Source: Nevada State Demographer’s Office (2004a).

Tables 7 and 8 document population trends and projections for the state of Nevada prepared by the Nevada State Demographer’s Office. The state’s population is projected to increase by 688,803 or 29% from 2004 to 2014. Most of this growth is taking place in the Las Vegas metropolitan area, where the population is projected to increase from an estimated 1.69 million in 2004 to 2.28 million in 2014 (35%). While the amount and rate of population growth is greatest in southern Nevada, rural regions of the state and urban areas of northwestern Nevada will continue to experience substantial population increases through the end of the decade.

**Table 8 – Estimated Population and Population Growth Among Nevadans Aged 65 and Over in Nevada, 2004 to 2014**

REGION	ESTIMATED POPULATION AGED 65 and OVER			POPULATION CHANGE – 2004 to 2014	
	2004	2009	2014	Number	Percent
Urban South	182,948	226,062	273,318	90,370	49.4%
Urban North	47,288	9,710	63,396	16,108	34.1%
Rural and Frontier	34,677	41,742	49,585	14,908	43.0%
Total – Nevada	264,913	321,378	386,299	121,386	45.8%

Source: Nevada State Demographer’s Office (2004b).

Population aging represents the second major demographic influence on the demand for hospital and health care services in Nevada. Due to improvements in public health and clinical care, the average life span of Nevada residents continues to increase. The state’s population is thus growing older and living longer. In addition, the number of retirees and those close to retirement migrating to Nevada has increased substantially over the past decade. Consequently, one of the fastest growing segments of the state’s population are those aged 65 and older. Table 8 highlights some of these trends. According the State Demographer, the number of Nevadans aged 65 and over is projected to increase by an estimated 121,386 or 45.8% from 2004 to 2014. Southern Nevada will add 90,370 residents aged 65 and over through 2014. Rural regions of the state and urban areas of northern Nevada will grow by approximately 31,000 through 2014. In summary, the principal demographic determinants driving increased demand for hospital care and other health care services – population growth and population aging – will continue to increase dramatically for the next decade.

**C. Selected Utilization and Economic Statistics on Nevada Hospitals**

Table 9 provides data on selected utilization and economic indicators for general medical and surgical hospitals in Nevada utilizing data collected by the Nevada Division of Health Care Financing and Policy and published in their annual three-volume summary of Nevada Hospital

**Table 9 – Selected Statistics on General Medical and Surgical  
Hospitals in Nevada, Fiscal Years 2000 to 2004**

<b>GENERAL MEDICAL and SURGICAL HOSPITALS in NEVADA</b>	<b>FY ENDING June 30, 2000</b>	<b>FY ENDING June 20, 2002</b>	<b>FY ENDING June 30, 2004</b>
Number of Hospitals	24	25	29
Licensed Beds	3,733	4,124	4,655
Licensed Beds per 1000 Population	1.85 per 1000	1.87 per 1000	1.93 per 1000
Nevada Population	2,023,378	2,206,022	2,410,768
Occupancy Rate	64%	66%	64%
Total Admissions (adjusted)	258,095	289,319	309,782
Total Inpatient Days (adjusted)	1,167,796	1,328,176	1,457,974
Employment – FTEs	16,753	18,889	22,821
Salary and Benefits	\$823,151,829	\$1,063,488,746	\$1,310,676,455
Net Operating Revenue	\$1,763,569,993	\$2,301,132,472	\$2,796,732,638
Operating Expenses	\$1,705,992,266	\$2,210,362,808	\$2,736,466,459
Profit (Revenue – Expenses)	\$57,577,727	\$90,769,664	\$60,266,179
Profit Margin (Profit / Revenue)	3.3%	3.9%	2.2%
Revenue per Admission	\$6,833	\$7,954	\$9,028
Expenses per Admission	\$6,610	\$7,640	\$8,834
Profit per Admission	\$223	\$314	\$195
Revenue per Inpatient Day	\$1,510	\$1,733	\$1,918
Expenses per Inpatient Day	\$1,461	\$1,664	\$1,877
Profit per Inpatient Day	\$49	\$68	\$41
Charge Write-Off	\$316,994,235	\$484,686,066	\$733,198,482
Percent of Cost to Charges	33.8%	32.2%	28.2%
Total Value of Free Care	\$107,144,051	\$156,553,599	\$206,761,972
Construction and Other Capital Investment	\$222,799,827	\$190,419,692	\$378,720,959

Sources: Nevada Division of Health Care Financing and Policy (2000-2004). Data on hospital construction and capital investment are for the related calendar years was generated from a survey of hospitals by the Nevada Hospital Association for the 2005 Nevada State Legislature. Notes: Data presented in this table may differ slightly from that in other sections of this report due to differences definitions and the type of hospitals and corresponding data utilized by different agencies.

Quarterly Reports for 2000 through 2004 (for Fiscal Years Ending June 30 each year). Over the past four years, general medical and surgical hospitals in Nevada have steadily added licensed beds, staff, and payroll. Since 2000, licensed hospital beds have increased by 922 beds. In fact, the number of hospital beds available to Nevadans has more than kept pace with population growth over the past four years. The number of licensed beds per population in Nevada has increased slightly from 1.85 per 1,000 population in 2000 to 1.93 in 2004. During the same time frame, statewide operating revenue for general medical and surgical hospitals has grown by \$1.03 billion dollars. However, operating expenses have grown at a faster pace. Consequently, over the past four years, hospital profit margins, profits per admission, and profit per inpatient day have declined. Aggregated hospital profit margins (net operating revenue minus operating expenses) for general medical and surgical margins have declined from 3.3% in 2000 to 2.2% in 2004. Similarly, profit per admission has declined by \$28 and profit per inpatient day has decline by \$8 from 2000 to 2004.

Table 9 also documents the substantial amount of charity or free care provided by Nevada's general medical and surgical hospitals. In 2004, Nevada hospitals provided \$207 million dollars in uncompensated care or nearly twice the amount provided in 2000. In addition, Nevada hospitals invest a considerable amount of dollars in the construction of new facilities, renovation and expansion of existing facilities, and other capital investments. In 2004, Nevada's 29 general medial and surgical hospitals invested \$378 million in construction and other capital improvements – an increase of \$156 million or 70% over what was invested just four years earlier in 2000. In summary, these data document the considerable and varied economic impact and contribution of Nevada hospitals to the state's economy.

### III. IMPACT OF NEVADA HOSPITALS ON THE NEVADA ECONOMY

The foregoing discussion highlights the numerous economic contributions of Nevada hospitals to the overall Nevada economy. The hospital sector is a major source of employment and income. The foregoing analysis does not tell the entire story since secondary economic impacts are created when hospitals and hospital employees spend money on goods and services. These secondary benefits are measured by multipliers using an input-output model and IMPLAN data. Secondary benefits are also generated by hospital construction and capital improvement projects pursued by Nevada hospitals. As Nevada hospitals spend dollars for operating and capital expenditures, they create jobs and payroll in other businesses in the economy. To the extent that dollars earned by hospital and construction employees are spent in Nevada, the health sector contributes to the creation of jobs and payroll in other Nevada businesses. The jobs and payroll generated in other businesses can be measured with employment and income multipliers derived for Nevada.

#### A. The Multiplier Effect

The impact of health care expenditures and health care employee expenditures are called multiplier effects. Multiplier effects are a simplified and compact way of representing these effects on the state's economy. The multiplier is interpreted as the impact of a one-unit change in sales, employment, or income that results in a corresponding total impact on sales, employment, or income in the larger economy. In essence, the multiplier represents the recycling of dollars and income in a specified geographic unit. This recycling creates new job opportunities and higher wages for individuals.

There are three types of multiplier effects based on the type of economic impact analysis undertaken: direct, indirect, and induced. These types are illustrated in Table 10. The *direct multiplier effect* is based on an industry's initial economic impact on the region's economy. For example, if a manufacturing plant has a revenue of \$5 million, then this figure becomes the direct economic impact on the community. The *indirect multiplier effect* is based on industry-to-industry transactions only. For example, the health care sector purchases local laundry, food, and

other contracted services. However, the indirect multiplier effect does not include the effect of health-sector employee spending on retail and service sectors such as housing, groceries, and real estate. Alternatively, the *induced multiplier effect* includes both the industry-to-industry transactions and household purchases, including employee spending. The total economic impact is defined as the direct plus indirect and induced economic impacts.

**Table 10 – Hospital and Health Care Related Economic Impact Multipliers**

<b>TYPE OF MULTIPLIER</b>	<b>DIRECT</b>	<b>INDIRECT</b>	<b>INDUCED</b>
<b>Employment Multiplier</b>	Health care jobs	Health care supplier jobs	Local retail and service jobs related to health care employee spending
<b>Income Multiplier</b>	Health care employee income	Health care supplier employee income	Local retail and service income related employee spending

The direct, indirect, and induced multiplier effects can be classified as employment and income multipliers. An employment multiplier of 2.0 indicates that if one job is created in the health care sector, 1.0 additional jobs are created other sectors due to business and household spending. Likewise, an income multiplier of 2.0 indicates that for every dollar of income created in the health sector, an additional dollar of income is created in other sectors due inter-industry spending by health businesses and employees. The measurement of multiplier effects, the input-output model, and IMPLAN data utilized in this report are explained in Appendix A.

Table 11 provides a profile and categorization of the hospitals and sectors included in the economic impact analysis. The following analysis examines hospital impacts in three regions of the state: (1) “Urban South” (Clark County), (2) “Urban North” (Carson City and Washoe County), and (3) “Rural and Frontier Nevada” (the remaining fourteen rural and frontier counties in the state). Two principal types of employment and income impacts are presented in this report: (1) impacts for all hospitals in Nevada (NAICS 622), which includes both general and specialty-care hospitals, and (2) the large subset of hospitals that provide general medical and surgical services (NAICS 6221) and which are commonly referred to as “Community Hospitals.”

**Table 11 – Profile of Hospitals Included in the Impact Analysis for the Year 2002**

HOSPITAL DATA	REGION OF NEVADA			
	Urban South	Urban North	Rural and Frontier	Total – Statewide
<b>NUMBER OF HOSPITALS</b>				
General Medical and Surgical Hospitals (NAICS 6221)	10	5	10	25
Speciality, Rehabilitation, and Psychiatric Hospitals	9	9	0	18
<b>TOTAL – ALL HOSPITALS (NAICS 622)</b>	19	14	10	43
<b>NUMBER OF LICENSED BEDS</b>				
General Medical and Surgical Hospitals (NAICS 6221)	2,813	1,234	204	4,251
Speciality, Rehabilitation, and Psychiatric Hospitals	825	502	0	1,327
<b>TOTAL – ALL HOSPITALS (NAICS 622)</b>	3,638	1,736	204	5,578
<b>COUNTIES IN REGION</b>	Clark County	Carson City and Washoe County	Remaining 14 Rural and Frontier Counties	N/A

Sources: Nevada Division of Health Care Financing and Policy (2000-2004) and Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005).

## B. The Impact of Nevada Hospitals on Employment

Tables 12 through 15 provide estimates of the direct and secondary employment impacts of hospital operating activities for all hospitals in Nevada (NAICS 622) and the large subset of hospitals that provide general medical and surgical care (NAICS 6221) in Nevada in 2002. The analysis utilizes 2002 employment data from the Regional Economic Information System (REIS) (2005) and employment multipliers developed by the Minnesota IMPLAN Group, Inc. (2005).

**Table 12 – Total Employment Impact of All Nevada Hospitals (NAICS 622) from Operating Activities, 2002**

REGION	HOSPITAL EMPLOYMENT	HOSPITAL EMPLOYMENT MULTIPLIER	JOBS CREATED in OTHER BUSINESSES	TOTAL EMPLOYMENT from HOSPITAL OPERATING ACTIVITIES
Urban South	15,467	1.771	11,925	27,392
Urban North	7,835	1.825	6,464	14,299
Rural and Frontier	1,404	1.570	800	2,204
Total – Nevada	24,706	1.777	19,189	43,895

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

The employment impact of all Nevada hospitals (NAICS 622) is presented in Table 12. In 2002, 24,706 people were employed by Nevada hospitals. Applying IMPLAN employment multipliers for the hospital sector, the total number of jobs created by Nevada hospitals was 43,895. In other words, Nevada hospitals generated an additional 19,189 jobs in other Nevada businesses through normal operating activities during 2002. Table 12 also provides a regional breakdown of employment impacts.

Table 13 highlights the estimated employment impact of general medical and surgical hospitals in Nevada (NAICS 6221). In 2002, 23,045 people were employed by the state's 25 general medical and surgical hospitals. Applying IMPLAN employment multipliers for the hospital sector, the total number of jobs created by Nevada general and medical surgical hospitals was

40,894. In other words, through normal operating activities, Nevada general medical and surgical hospitals produced an additional 19,189 jobs in other Nevada businesses during 2002. Table 13 also provides a regional breakdown of employment impacts. In southern Nevada, the region's 10 general medical and surgical hospitals employed 14,900 individuals, yet had a total employment impact of 26,388 through the creation of 11,488 jobs in other businesses in Clark County and other parts of the state.

**Table 13 – Total Employment Impact of General Medical and Surgical Hospitals in Nevada Hospitals (NAICS 6221) from Operating Activities, 2002**

REGION	HOSPITAL EMPLOYMENT	HOSPITAL EMPLOYMENT MULTIPLIER	JOBS CREATED in OTHER BUSINESSES	TOTAL EMPLOYMENT from HOSPITAL OPERATING ACTIVITIES
Urban South	14,900	1.771	11,488	26,388
Urban North	6,741	1.825	5,561	12,302
Rural and Frontier	1,404	1.570	800	2,204
Total – Nevada	23,045	1.777	17,849	40,894

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

Tables 14 and 15 present employment impacts in terms of the direct, indirect, and total employment impacts per licensed hospital bed. Table 14 indicates that the direct employment impact of all hospitals in Nevada (NAICS 662) was 4.43 jobs per licensed bed in 2002. When the indirect or secondary employment impacts are taken into account, Nevada hospitals produced a total employment impact of 8.16 jobs for every licensed bed in the state. Table 15 reveals that the direct employment impact of general medical and surgical hospitals in Nevada (NAICS 6221) was 5.42 jobs per licensed bed in 2002. When secondary employment impacts are included, Nevada general medical and surgical hospitals produced a total employment impact of 9.62 jobs for every licensed bed in the state that year. In other words, every hospital bed resulted 5.42 jobs within the hospital industry and an additional employment impact of 3.2 jobs in other Nevada businesses.

**Table 14 – Employment Impacts of All Nevada Hospitals (NAICS 622)  
by Bed from Operating Activities, 2002**

REGION	NUMBER OF LICENSED BEDS IN NAICS 622 HOSPITALS	– EMPLOYMENT IMPACTS –		
		NUMBER of JOBS per LICENSED BED from OPERATING ACTIVITIES in NAICS 622 HOSPITALS		
		Direct Impact	Indirect Impact	Total Impact
Urban South	3,638	4.25	3.28	7.53
Urban North	1,736	4.51	3.73	8.24
Rural and Frontier	204	6.88	3.93	10.81
Total – Nevada	5,578	4.43	3.73	8.16

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

**Table 15 – Employment Impacts of General Medical and Surgical Hospitals in  
Nevada (NAICS 6221) by Bed from Operating Activities, 2002**

REGION	NUMBER OF LICENSED BEDS IN NAICS 6221 HOSPITALS	– EMPLOYMENT IMPACTS –		
		NUMBER of JOBS per LICENSED BED from OPERATING ACTIVITIES in NAICS 6221 HOSPITALS		
		Direct Impact	Indirect Impact	Total Impact
Urban South	2,813	5.30	4.08	9.38
Urban North	1,234	5.46	4.51	9.97
Rural and Frontier	204	6.88	3.93	10.81
Total – Nevada	4,251	5.42	4.20	9.62

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

### C. The Impact of Nevada Hospitals on Income

Tables 16 through 19 provide estimates of the direct and secondary income impacts of hospital operating activities for all hospitals in Nevada (NAICS 622) and the large subset of hospitals that provide general medical and surgical care (NAICS 6221) in Nevada in 2002. The analysis utilizes 2002 income data from the Regional Economic Information System (REIS) (2005) and income multipliers developed by the Minnesota IMPLAN Group, Inc. (2005).

**Table 16 – Total Income Impact of All Nevada Hospitals (NAICS 622) from Operating Activities, 2002**

REGION	HOSPITAL PAYROLL	HOSPITAL INCOME MULTIPLIER	PAYROLL CREATED in OTHER BUSINESSES	TOTAL PAYROLL from HOSPITAL OPERATING ACTIVITIES
Urban South	\$645,261,000	1.549	\$354,248,289	\$999,509,289
Urban North	\$262,050,000	1.589	\$154,347,450	\$416,397,450
Rural and Frontier	\$87,455,000	1.397	\$34,719,635	\$122,174,635
Total – Nevada	\$994,766,000	1.546	\$543,315,374	\$1,538,081,374

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

The income and payroll impact of all Nevada hospitals (NAICS 622) is presented in Table 16. In 2002, \$995 million in payroll was generated by Nevada hospitals. Applying IMPLAN income multipliers for the hospital sector, the total payroll created by Nevada hospitals was over \$1.54 billion. In other words, Nevada hospitals generated an additional \$543 million in payroll in other Nevada businesses through normal operating activities during 2002. Table 16 also provides a regional breakdown of income and payroll impacts of hospital sector across Nevada.

Table 17 highlights the estimated income and payroll impact of general medical and surgical hospitals in Nevada (NAICS 6221). In 2002, \$886 million in payroll was generated by the state's 25 general medical and surgical hospitals. Applying IMPLAN income multipliers for the hospital sector, the total payroll created by Nevada general and medical surgical hospitals was \$1.37

billion. In other words, through normal operating activities, Nevada general medical and surgical hospitals produced an additional \$482 million in payroll in other Nevada businesses during 2002. Table 17 also provides a regional breakdown of income impacts. In southern Nevada, the region's 10 general medical and surgical hospitals generated \$585 million in payroll, yet had a total income impact of \$1.37 billion through the generation of \$482 million in payroll in other businesses in the region and state.

**Table 17 – Total Income Impact of General Medical and Surgical Hospitals in Nevada Hospitals (NAICS 6221) from Operating Activities, 2002**

REGION	HOSPITAL PAYROLL	HOSPITAL INCOME MULTIPLIER	PAYROLL CREATED in OTHER BUSINESSES	TOTAL PAYROLL from HOSPITAL OPERATING ACTIVITIES
Urban South	\$584,591,000	1.549	\$320,940,459	\$905,531,459
Urban North	\$213,737,000	1.589	\$125,891,093	\$339,628,093
Rural and Frontier	\$87,455,000	1.397	\$34,719,635	\$122,174,635
Total – Nevada	\$885,783,000	1.544	\$481,551,187	\$1,367,334,187

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

Tables 18 and 19 present income and payroll impacts in terms of the direct, indirect, and total income impacts per licensed hospital bed. Table 18 indicates that the direct income impact of all hospitals in Nevada (NAICS 662) was \$178,337 in hospital payroll per licensed bed in 2002. When the indirect or secondary income impacts are taken into account, Nevada hospitals produced a total payroll impact of \$275,741 for every licensed bed in the state. Table 19 reveals that the direct income and payroll impact of general medical and surgical hospitals in Nevada (NAICS 6221) was \$208,371 per licensed bed in 2002. When secondary income impacts are included, Nevada general medical and surgical hospitals produced a total payroll impact of \$321,910 for every licensed bed in the state that year. In other words, every hospital bed resulted in \$208,371 in payroll within the hospital industry and an additional payroll impact of \$113,289 per bed in other Nevada businesses. Table 19 highlights considerable regional variation in total

**Table 18 – Income Impacts of All Nevada Hospitals (NAICS 622)  
by Bed from Operating Activities, 2002**

REGION	NUMBER OF LICENSED BEDS IN NAICS 622 HOSPITALS	– INCOME IMPACTS –		
		PAYROLL per LICENSED BED from OPERATING ACTIVITIES in NAICS 622 HOSPITALS		
		Direct Impact	Indirect Impact	Total Impact
Urban South	3,638	\$177,367	\$97,374	\$274,741
Urban North	1,736	\$150,950	\$88,910	\$239,860
Rural and Frontier	204	\$428,701	\$170,194	\$598,895
Total – Nevada	5,578	\$178,337	\$97,404	\$275,741

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

**Table 19 – Income Impacts of General Medical and Surgical Hospitals in  
Nevada (NAICS 6221) by Bed from Operating Activities, 2002**

REGION	NUMBER OF LICENSED BEDS IN NAICS 6221 HOSPITALS	– INCOME IMPACTS –		
		PAYROLL per LICENSED BED from OPERATING ACTIVITIES in NAICS 6221 HOSPITALS		
		Direct Impact	Indirect Impact	Total Impact
Urban South	2,813	\$207,818	\$114,092	\$321,910
Urban North	1,234	\$173,207	\$102,018	\$275,225
Rural and Frontier	204	\$428,701	\$170,194	\$598,895
Total – Nevada	4,251	\$208,371	\$113,279	\$321,650

Source: Regional Economic Information System, Bureau of Economic Analysis, United States Department of Commerce (2005); Minnesota IMPLAN Group (2005).

payroll impacts per bed. Due to the high fixed costs of hospital operating activities in rural parts of the state, the average payroll per bed was \$428,371 and the total (direct and indirect income impact) payroll per bed was \$598,895 for the 10 rural and frontier hospitals in 2002. By comparison, total payroll impacts for urban southern and urban northern Nevada were, respectively, \$321,910 and \$275,225 per bed.

In summary, the employment and income data presented in this section document the tremendous contribution of Nevada hospitals to the state's economy. The hospital sector employs a large and growing number of residents and generates a proportionately large and growing amount of payroll for hospital employees. Moreover, the hospital industry in Nevada generates additional economic benefits through the creation of jobs and payroll in secondary businesses as hospitals and hospital employees purchase and consume local goods and services. As the population-driven demand for hospital care and other health services increase over the next decade, the direct and total economic impact of Nevada hospitals will only grow in magnitude and importance.

#### **IV. IMPACT OF HOSPITAL CONSTRUCTION ON THE NEVADA ECONOMY: A CASE STUDY OF THE IMPACT OF HOSPITAL CONSTRUCTION ON INCOME AND EMPLOYMENT IN CLARK COUNTY, 2003-2004**

The previous section details the significant contribution of Nevada hospitals to the state's economy. That contribution is not simply limited to the employment and income impacts of hospital operating activity. The hospital sector has made a substantial economic impact on the state's economy through the direct and secondary income and employment effects associated with hospital construction. Over the past decade, over a dozen general medical and surgical hospitals have been built or expanded in Nevada, resulting in the addition of 1,523 acute care hospital beds in the state. During the same time period, an estimated \$1.2 billion has been invested by Nevada hospitals and communities in new hospital construction and capital improvements. By and large, these are dollars that have been reinvested in local businesses and communities in Nevada, resulting in additional employment and income for Nevada residents.

This section of the report provides an analysis of the economic impact of hospital construction in Clark County during 2003 and 2004. This case study of hospital construction impacts utilizes the same logic and model used to estimate the impact of hospital operating activity. The purpose of the case study is to highlight the fact that the economic contribution and impact of Nevada hospitals is not restricted to the employment and payroll impact of normal hospital operations and business activity – the hospital industry exerts employment and payroll impacts through the construction of new facilities, the expansion of existing hospitals, and the improvement of existing hospital plant and services. As such, the construction of a new hospital has a huge impact on a community's economy. Hospital construction not only generates wages and salaries paid to hospital construction workers, construction activity generates secondary employment and income in other local businesses, not to mention additional tax revenue for the city and county as wages and salaries are spent on goods and services establishments that collect sales taxes.

**A. Hospital Construction in Clark County, 2003 and 2004**

Table 20 provides a summary of hospital construction undertaken in Clark County in 2003 and 2004. Data presented in this table includes new hospital construction, as well as construction resulting in the expansion or renovation of existing hospital facilities. During the calendar years 2003 and 2004, Clark County hospitals spent an estimated \$164.4 million on construction. The table also contains information on the number of new medical and surgical beds that were created as a result of hospital construction activity in the county. During 2003 and 2004, 449 licensed beds were added at new and existing community hospitals in Clark County. While most of the county's construction was concentrated in Henderson and Las Vegas, over \$20 million in hospital construction took place in rural and frontier areas of the county, including the construction of a new, 25-bed facility in Mesquite.

**Table 20 – Estimated Amount of Hospital Construction in General Medical and Surgical Hospitals (NAICS 6221) Clark County, 2003-2004**

HOSPITAL	ESIMATED AMOUNT OF HOSPITAL CONSTRUCTION – 2003 & 2004	NEW BEDS ADDED FROM CONSTRUCTION
Boulder City Hospital	\$2,740,000	0
Desert Springs Hospital	\$366,000	0
Mesa View Regional Hospital (Mesquite)	\$19,000,000	25
Mountain View Hospital	\$3,544,000	7
Southern Hills Hospital	\$36,128,000	130
Spring Valley Hospital Medical Center	\$55,520,000	176
St. Rose Dominican – Siena	\$18,108,000	68
Summerlin Hospital and Medical Center	\$11,663,000	30
Sunrise Hospital and Medical Center	\$9,137,000	13
University Medical Center	\$4,560,000	0
Valley Hospital Medical Center	\$3,600,000	0
<b>Total – Clark County</b>	<b>\$164,366,000</b>	<b>449</b>

Source: Hospital construction figures were obtained from a survey of general medical and surgical hospitals in Clark County.

**B. Estimated Impact of Hospital Construction on Employment and Income in Clark County, 2003 and 2004**

Table 21 provides an estimate of the total employment impact of hospital construction in Clark County in 2003 and 2004. Using the construction employment-output ratio, it was estimated that hospital construction of \$164.4 million dollars created 1,589 jobs in Clark County. Moreover, applying IMPLAN employment multipliers for the construction sector, 1,589 construction jobs were created and the total number of jobs generated by hospital construction was 2,744. In other words, an additional 1,155 jobs in other county businesses during 2003 and 2004 as a result of hospital construction activities. When both direct and indirect employment impacts are included, hospital construction produced a total employment impact of 6.11 jobs for every new licensed bed created in Clark County during the two-year period.

**Table 21 – Total Employment Impact of Hospital Construction in Clark County, 2003 and 2004**

HOSPITAL CONSTRUCTION EMPLOYMENT	HOSPITAL CONSTRUCTION EMPLOYMENT MULTIPLIER	JOBS CREATED IN OTHER BUSINESSES	TOTAL EMPLOYMENT FROM HOSPITAL CONSTRUCTION ACTIVITIES	TOTAL IMPACT per LICENSED BED (Jobs/Bed)
1,589	1.727	1,155	2,744	6.11

Source: Minnesota IMPLAN Group (2005).

Table 22 provides an estimate of the total income and payroll impact of hospital construction in Clark County in 2003 and 2004. It was estimated that hospital construction of \$164.4 million dollars generated approximately \$82.0 million in payroll for construction workers in Clark County during that period. Moreover, applying IMPLAN income multipliers for the construction sector, the total payroll generated by hospital construction was \$125.5 million. In other words, an additional \$43.5 million in payroll was generated in other county businesses during 2003 and 2004 as a result of hospital construction activities. When both direct and indirect employment impacts are included, hospital construction produced a total payroll impact of \$279,493 for every

new licensed bed created in Clark County during the two-year period.

**Table 22 – Total Income Impact of Hospital Construction  
in Clark County, 2003 and 2004**

<b>HOSPITAL CONSTRUCTION INCOME</b>	<b>HOSPITAL CONSTRUCTION INCOME MULTIPLIER</b>	<b>INCOME CREATED IN OTHER BUSINESSES</b>	<b>TOTAL INCOME FROM HOSPITAL CONSTRUCTION ACTIVITIES</b>	<b>TOTAL IMPACT per LICENSED BED (Income/Bed)</b>
\$82,021,107	1.530	\$43,471,187	\$125,492,294	\$279,492

Source: Minnesota IMPLAN Group (2005).

Finally, using procedures developed by Doeksen (2004), it was estimated that, on average for Clark County during 2003 and 2004, 53 percent of personal income was spent on goods and services from which sales taxes are collected. Using this average and the Clark County sales tax rate of 7.5 percent, taxable retail sales generated tax revenue of approximately \$5 million during 2003 and 2004 from goods and services purchased by workers as a result of hospital construction in the Las Vegas area. In summary, the case study of the economic impact of hospital construction highlights the substantial employment, income, and tax revenue generated by hospital construction in Clark County over the past two years. Given the population-driven projected growth in demand for hospital and health care services in Clark County and the rest of Nevada, the hospital sector will continue to drive substantial income, employment, and tax-revenue growth for the next decade.

## **V. CONCLUSION: THE CONTRIBUTION OF HOSPITALS TO THE NEVADA ECONOMY**

This report has documented a number of major contributions of Nevada hospitals to the state's economy. Hospitals are a major economic engine, generating a large and growing amount of employment and payroll in Nevada. Hospitals play a critical role in local and regional economic development by creating jobs and payroll in other businesses in the economy through normal operating activities, as well as hospital construction. Utilizing the most current Bureau of Economic Analysis (BEA) data available, the analysis presented in this report indicates that Nevada hospitals employed 24,706 individuals in 2002. When the employment created by other businesses as a result of hospital operating activity is included in the analysis, the Nevada hospital industry directly and indirectly generated a total of 43,895 jobs in the state. Similarly, Nevada hospitals generated \$995 million in payroll for the year 2002. When the income created by other businesses as a result of hospital operating activity is included in the analysis, the Nevada hospital industry was responsible for \$1.5 billion in payroll for state hospitals and other businesses. Hospitals also contribute to the state's economy through expenditures on capital improvements and new construction. The case study presented in this report estimated that 2,744 jobs and \$125 million in payroll were generated in Clark County during 2003 and 2004. Finally, data presented in the report indicate that rapid population growth and an aging population in all regions of the state will continue to fuel a growing demand for health care and hospital services for the foreseeable future. Consequently, the hospital sector has been and will continue to exert a large and growing economic impact in Nevada through the creation of new jobs and payroll, as well as tax revenues for municipal and county governments.

## VI. APPENDICES

### A. Model and Data Used to Estimate Employment and Income Multipliers

The economic impacts and secondary benefits of economic activity presented in this report are measured by multipliers using an input-output model and data from IMPLAN, a model that is widely used by economists and other academics in the United States. A computer spreadsheet that uses state IMPLAN multipliers was developed by to enable community development specialists to measure the secondary benefits of the health sector on state, regional, or county economies. The complete methodology is presented in *Measuring the Economic Importance of the Health Sector on a Local Economy: A Brief Literature Review and Procedures to Measure Local Impacts* (Doeksen, et al. 1997).

Input-output (I/O) analysis is designed to analyze the transactions among industries in an economy (Miernyk 1965). These models are largely based on the work of Wassily Leontief during the 1930s. Detailed I/O analysis captures the indirect and induced interrelated circular behavior of the economy. For example, an increase in the demand for health services requires more equipment, more labor, and more supplies, which, in turn, requires more labor to produce the supplies, and so on. By simultaneously accounting for structural interaction between sectors and industries, I/O analysis gives expression to the general economic equilibrium systems. The analysis utilizes assumptions based on linear and fixed coefficients and limited substitutions among inputs and outputs. The analysis assumes that average and marginal I/O coefficients are equal. Nonetheless, the framework has been widely accepted and used by economists and policymakers. I/O analysis is useful when carefully executed and interpreted in defining the structure of a region, the interdependencies among industries, and forecasting economic outcomes. The I/O model coefficients describe the structural interdependencies of an economy. From the coefficients, various predictive devices can be computed, which can be useful in analyzing economic changes in a state, region, or county. Multipliers indicate the relationship between some observed change in the economy and the total change in economic activity created through the economy.

MicroIMPLAN is a computer program developed by the United States Forest Service to construct I/O accounts and models (Alward, et al. 1989). Typically, the complexity of I/O modeling has hindered practitioners from constructing models specific to a community requesting an analysis. Too often, inappropriate multipliers have been used to estimate local economic impacts. In contrast, IMPLAN can construct a model for any state, region, county, or zip code area in the United States by using available state, region, county, or zip code data. Impact analysis can be performed once a regional I/O model is constructed.

Five different sets of multipliers are estimated by IMPLAN, corresponding to five measures of regional economic activity: (1) total industry output, (2) personal income, (3) total income, (4) value added, and (5) employment. Three types of multipliers are generated. Type I multipliers measure the impact in terms of direct and indirect effects. Direct impacts are the changes in the activities of the focus industry or firm, such as the construction of a hospital or the closing of a hospital. The focus business changes its purchases and inputs as a result of the direct impacts. This produces indirect impacts in other business sectors. However, the total impact of a change in the economy consists of direct, indirect, and induced changes. Both the direct and indirect impacts change the flow of dollars to the state, region, or county's households. Subsequently, the households alter their consumption. The effect of the changes in household consumption on businesses in a community is referred to as an induced effect. To measure the total impact, a Type II multiplier is used. The Type II multiplier compares direct, indirect, and induced effects with the direct effects generated by a change in final demand (the sum of direct, indirect, and induced effects divided by direct effects). IMPLAN also estimates a modified Type II multiplier that also includes the direct, indirect, and induced effects. The Type III multiplier further modifies the induced effect to include spending patterns of households based on a breakdown of households by nine different income groups.

Additional information on the data, methodology, and software requirements of I/O modeling and IMPLAN analysis can be found in guides developed by Doeksen, et al. (1997), Alward, et al., (1989), and the Minnesota IMPLAN Group (MIG) (2000).

## B. References

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