

**The Impact of Boulder City Hospital  
on the Local Economy**



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# The Impact of Boulder City Hospital on the Local Economy

## Introduction

The primary purpose of this report is to document the contribution of Boulder City Hospital (BCH) to the local economy of Boulder City, Nevada. Data presented in this report reveal that the hospital has a substantial impact on income, employment, and sales tax revenue in the Boulder City Hospital service area – a contribution often overlooked in public policy discussions of health care costs, access to care, and community benefits. The hospital plays a critical role in local economic development by creating jobs and income for local residents through the normal hospital operations. The hospital is also responsible for generating employment and income in other businesses in the Boulder City area.

Utilizing data provided by Boulder City Hospital, the analysis presented in this report indicates that BCH spent \$18.9 million locally on operations in 2007. When the expenditures by other businesses as a result of the hospital are included in the analysis, BCH directly and indirectly generated a total of \$26.9 million in spending in the Boulder City service area. Additionally, the hospital employed 198 individuals living in the Boulder City service area in 2007. When the employment created by other businesses as a result of the hospital is included in the analysis, BCH directly and indirectly generated a total of 284 jobs in the district. Similarly, BCH generated \$9.0 million in payroll for the year 2007. When the income created by other businesses as a result of the hospital is included in the analysis, BCH was responsible for \$11.4 million in payroll for BCH employees and those employed in other businesses.

In addition to hospital operations expenditures, BCH also spent \$433 thousand locally on construction in 2007, which generated a total of \$596 thousand in expenditures throughout the Boulder City service area. The construction employed 4 individuals living in the local area. Including the employment created by other businesses as a result of hospital construction in the analysis, a total of 5 jobs were generated in the Boulder City area. The hospital construction created \$220 thousand in payroll for 2007. When the payroll generated by other businesses as a result of the hospital construction is included in the analysis, Boulder City Hospital was responsible for \$273 thousand in payroll for local residents.

As local and state policymakers consider the medical and health care priorities for rural areas, they should bear in mind the importance of hospitals to local and regional economies. As this report demonstrates, BCH provides much more than necessary medical care and services. The jobs, income, and economic benefits created in other businesses, as well as sales tax revenue generated by all sectors represent additional contributions to economic well-being in the Boulder City service area. Finally, the hospital's investment in high technology, capital improvements, and new construction continues to generate additional income and employment for the area's economy.

This report – *The Impact of Boulder City Hospital on the Local Economy* – was prepared for the citizens, community leaders, and health care providers of the Boulder City by the Nevada Rural Health Works Program. This program is a joint research and policy analysis project of the Nevada Office of Rural Health at the University of Nevada School of Medicine, Nevada Cooperative Extension, and the Center for Economic Development at the University of Nevada, Reno. Over the past decade, Nevada Rural Health Works Program has provided local and state leaders with the information and assistance needed to make the best possible decisions about the role of hospitals and the health sector in economic development. Research undertaken by the Nevada Rural Health Works Program includes community health care needs assessments, budget studies and feasibility assessments, community health planning, market demand studies, and economic impact analysis.

*The Impact of Boulder City Hospital on the Local Economy* is divided into three sections. The first section briefly discusses the role of the health sector in rural economic development, highlighting the financial and non-financial linkages between the health sector and the rest of the local economy. The second section provides an overview of the demographic and economic context of the Boulder City Hospital service area. The third section demonstrates the direct and indirect economic impact of Boulder City Hospital on jobs and payroll in the local economy. Utilizing an economic impact model developed specifically for the health care industry, this report provides estimates of the direct economic contribution of hospital operating activity, as well as the indirect or secondary income and employment impacts in other businesses resulting from hospital activity. The jobs and income generated in other business are estimated with employment and income multipliers derived for the hospital’s service area. The report also contains an appendix that summarizes the model and data used to estimate employment and income multipliers.

## **Rural Health Care and Local Economic Development**

Over the past couple of decades, the health sector has become an important engine of economic growth in Boulder City and Clark County. The health sector includes hospitals, clinics, and physician practices, as well as nursing homes, pharmacies, and other providers of medical services and products. The premise of this report is that rural communities and leaders need to improve their understanding of the importance of the health sector to the local economy, including the amount of jobs and payroll it provides, directly and indirectly, and its role in generating additional employment and income to the residents in southern Nevada. The nexus between health care services and rural development is typically overlooked. A couple of fundamental areas of commonality exist. First, a strong health care system can attract and maintain business and job growth, and “keeping health care dollars at home.” Second, the existence of quality health care services is a key factor in attracting and retaining retirees.

## Local Business and Job Growth

Research has documented the important role of quality-of-life factors in business and industry location decisions. A key quality-of-life factor is the availability and quality of health care services. The availability of health care services is important for a couple of reasons. First, employees and management may offer strong resistance if they are asked to move into a community with substandard or inconveniently located health services. Second, any business or industry making a location decision wants to ensure that the local labor force will be productive, and a key factor in productivity is good health. Thus, investments in health care services yield dividends in the form of increased labor productivity. And, the rising cost of health care services is a key factor considered by business and industry in location decisions. The existence of health care services locally can lower health care costs for business and their employees and provide value-added services for firms such as occupational health.

In general, payroll and employment in Nevada's health care sector, including regions of the state such as Boulder City, have grown consistently over the past thirty years. Moreover, the principal demographic factors driving increased demand for hospital care and other health care services – population growth and population aging – are projected to increase substantially over the next two decades.

## Health Services and Attracting Retirees

A strong and convenient health care system is important to retirees, a special group of residents whose spending and purchasing is a significant source of income for the local economy. Many rural areas have environments (e.g., good climate and outdoor activities) that enable them to be in a good position to attract and retain retirees. The amount of spending by retirees, including the purchasing power associated with Social Security, Medicare, and other transfer payments, is substantial. Additionally, middle- and upper-income retirees often have substantial net worth. Several studies have indicated that the availability of quality health services, along with safety, housing, and recreation opportunities, was a key predictor of retirement location considerations. In general, like worker, retirees are more likely to choose a retirement location that has access to quality health care.

## “Keeping Local Health Care Dollars at Home”

In summary, the existence of a strong health care system plays a critical role in local economic development by attracting business, industry and retirees, as well as generating jobs and payroll in its own right. However, the most important economic role the health sector plays in local economic development is “keeping local health care dollars at home.” There are many sources of local health care dollars including commercial and private insurance, Medicare, Medicaid and other transfer payments, and consumer out-of-pocket payments to health care providers and businesses. If these expenditures leave the community (e.g., individuals who travel into Las Vegas for medical care that could be obtained at Boulder City Hospital), they represent a real loss of potential jobs and income to local residents. In other words, payments

for health care services and goods outside of the local community not only affect the health services sector, the “leakage” of those dollars out of the community has repercussions for the entire local economy.

Health care employers and employees are important purchasers of goods and services supporting local business and industry. In Boulder City and most other communities in Nevada, employees in the health service sector realize higher than average wages and are an important segment in local household consumption. Hospitals and other health sector establishments are also important purchasers of local goods and services, such as laundry and waste management, essential to the provision of health care. In summary, the health sector and other businesses that comprise the local economy mutually support one another through purchases and sales. As such, the strength and vitality of the health services sector is a key component of local economic development. The remainder of this report documents the importance of Boulder City Hospital as an economic engine in its own right and highlights the specific economic contributions of the hospital to other local businesses.

### Demographic and Economic Context of the Boulder City

Tables 1 and 2 provide selected demographic and economic data for Boulder City, Clark County, and Nevada (see Appendix A for data sources). Table 1 highlights the significant population growth experienced in Boulder City over the last decade. Over the next five years, the Boulder City population is projected to increase by more than 10 percent.

**Table 1 – Selected Demographic Data for Boulder City**

Demographic Indicator	Number	Percent
Population Growth (1990-00)	12,651 – 15,082	19.2%
Population Growth (2000-07)	15,082 – 15,910	5.5%
Estimated Population Growth 2007-2012	15,910 – 17,528	10.2%
Population by Race (2007)		
White	14,763	92.8%
Black	155	1.0%
Native American	124	0.8%
Asian or Pacific Islander	152	1.0%
Other	716	4.5%
Population by Age (2007)		
0-19	2,911	18.3%
20-64	8,658	54.4%
65 and over	4,341	27.3%

Table 2 provides an economic snapshot of Boulder City and comparative data for Clark County, Nevada, and the United States. In general, Boulder City possessed a higher per capita income as compared to Clark County, Nevada, or the nation. Table 2 also provides information on unemployment rates. In 2007, Boulder City had a lower unemployment rate than Clark County or Nevada.

**Table 2 – Economic Indicators for Boulder City, Clark County, Nevada and the United States – 2007**

Indicator	Boulder City	Clark County	Nevada	United States
Total Personal Income*	\$544,313	\$52,152,863	\$73,411,727	\$8,552,017,189
Per Capita Income	\$34,212	\$27,543	\$27,752	\$27,916
Average Household Income	\$77,797	\$73,265	\$72,923	\$73,126
Unemployment Rate	6.6%	7.1%	6.7%	6.6%

\*Thousand dollars

## Impact of Boulder City Hospital on the Local Economy

### The Multiplier Effect

The impact of hospital expenditures and hospital employee expenditures are called multiplier effects. Multiplier effects are a simplified and compact way of representing these effects on the local 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, such as the zip codes that comprise the principal Boulder City Hospital service area. 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 3 below. 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 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 hospital sector purchases local laundry, food, and other contracted services. However, the indirect multiplier effect does not include the effect of hospital-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 3 – Hospital Related Economic Impact Multipliers**

<b>Type of Multiplier</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<b>Output Multiplier</b>	Hospital Expenditures	Hospital Supplier Expenditures	Local retail & service expenditures related to hospital spending
<b>Employment Multiplier</b>	Hospital jobs	Hospital supplier jobs	Local retail and service jobs related to hospital employee spending
<b>Income Multiplier</b>	Hospital employee income	Hospital supplier employee income	Local retail and service income related employee spending

The direct, indirect, and induced multiplier effects can be classified as output, employment and income multipliers. An output multiplier of 2.0 indicates that if one dollar is spent by the hospital, an additional dollar is spent in other sectors due to business and household spending. An employment multiplier of 2.0 indicates that if one job is created in the health care sector, 1.0 additional jobs are created in 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 B.

## The Impact of Boulder City Hospital on Local Expenditures

Table 4 summarizes the impact of Boulder City Hospital on expenditures in the local economy utilizing the most current IMPLAN output multipliers and payroll data provided by Boulder City Hospital. Table 4 reveals that BCH spent \$18,864,248 locally on operations in 2007. Applying the IMPLAN output multiplier of 1.43 for the hospital sector, the total expenditures created by BCH operations spending was \$26,920,857. In other words, BCH generated an additional \$8,056,609 through induced and indirect economic activity during 2007. Table 4 also highlights the sectors impacted by the hospital expenditures. For example, operations expenditures by BCH created an additional \$332,753 in spending by the Utilities sector.

**Table 4 – Impact of Boulder City Hospital on Local Expenditures – 2007**

Sector	Local Expenditures Impacts (Dollars)			
	Direct Impact	Indirect Impact	Induced Impact	Total Impact
Agriculture, Forestry, Fishing & Hunting	\$0	\$4,143	\$8,909	\$13,052
Mining	\$0	\$101	\$65	\$166
Utilities	\$0	\$130,449	\$202,304	\$332,753
Construction	\$0	\$100,331	\$30,021	\$130,352
Manufacturing	\$0	\$160,687	\$109,807	\$270,494
Wholesale Trade	\$0	\$120,468	\$184,185	\$304,653
Transportation & Warehousing	\$0	\$165,735	\$125,150	\$290,885
Retail Trade	\$0	\$50,610	\$563,900	\$614,510
Information	\$0	\$20,857	\$31,763	\$52,621
Finance & Insurance	\$0	\$289,275	\$332,103	\$621,379
Real Estate & Rental	\$0	\$1,047,515	\$314,104	\$1,361,619
Professional – Scientific & Technical Services	\$0	\$494,228	\$134,965	\$629,192
Management of Companies	\$0	\$0	\$0	\$0
Administrative & Waste Services	\$0	\$251,929	\$46,846	\$298,775
Educational Services	\$0	\$971	\$38,341	\$39,312
Health & Social Services	\$18,864,248	\$2,488	\$798,070	\$19,664,806
Arts – Entertainment & Recreation	\$0	\$8,844	\$89,411	\$98,255
Accommodation & Food Services	\$0	\$261,948	\$511,680	\$773,628
Other Services	\$0	\$65,975	\$179,641	\$245,616
Government & non-NAICS	\$0	\$59,113	\$1,119,677	\$1,178,790
<b>Total</b>	<b>\$18,864,248</b>	<b>\$3,235,667</b>	<b>\$4,820,942</b>	<b>\$26,920,857</b>

## The Impact of Boulder City Hospital on Local Employment

Table 5 summarizes the impact of Boulder City Hospital on local employment utilizing the most current IMPLAN employment multipliers and employment data provided by Boulder City Hospital. Table 5 reveals that 198 individuals were employed by the hospital in 2007. Applying the IMPLAN employment multiplier of 1.44 for the hospital sector, the total number of local jobs created by BCH was 284. In other words, BCH generated an additional 86 jobs through induced and indirect economic activity during 2007. Table 5 also highlights the sectors gaining the additional jobs created by the hospital. For example, BCH created 14 new jobs in the Real Estate & Rental sector.

**Table 5 – Impact of Boulder City Hospital on Local Employment – 2007**

Sector	Employment Impacts (Number of Jobs)			
	Direct Impact	Indirect Impact	Induced Impact	Total Impact
Agriculture, Forestry, Fishing & Hunting	0	0	0	0
Mining	0	0	0	0
Utilities	0	0	1	1
Construction	0	1	0	1
Manufacturing	0	1	1	1
Wholesale Trade	0	1	1	2
Transportation & Warehousing	0	3	2	5
Retail Trade	0	1	10	11
Information	0	0	0	0
Finance & Insurance	0	3	2	5
Real Estate & Rental	0	10	3	14
Professional – Scientific & Technical Services	0	5	2	7
Management of Companies	0	0	0	0
Administrative & Waste Services	0	5	1	6
Educational Services	0	0	1	1
Health & Social Services	198	0	11	208
Arts – Entertainment & Recreation	0	0	2	2
Accommodation & Food Services	0	5	10	15
Other Services	0	1	4	5
Government & non-NAICS	0	0	1	1
<b>Total</b>	<b>198</b>	<b>37</b>	<b>50</b>	<b>284</b>

The Impact of Boulder City Hospital on Local Income and Payroll

Table 6 documents the income and payroll impact of Boulder City Hospital utilizing the most current IMPLAN income multipliers and data provided by BCH. In 2007, the total payroll created by the hospital was \$9,052,150. Applying the IMPLAN income multiplier of 1.26 for the hospital sector, the total payroll created by the BCH was \$11,371,478. In other words, the BCH generated an additional \$2,319,328 in payroll through induced and indirect economic activity during 2007. Table 6 provides a detailed breakdown of the sectors gaining the additional payroll generated by BCH. For example, the \$9.0 million in payroll created an additional \$230,409 in payroll in the Retail sector.

**Table 6 – Impact of Boulder City Hospital on Local Income and Payroll – 2007**

Sector	Income and Payroll Impacts (Dollars)			
	Direct Impact	Indirect Impact	Induced Impact	Total Impact
Agriculture, Forestry, Fishing & Hunting	\$0	\$2,365	\$4,258	\$6,623
Mining	\$0	\$32	\$19	\$51
Utilities	\$0	\$26,053	\$40,404	\$66,458
Construction	\$0	\$40,171	\$12,756	\$52,927
Manufacturing	\$0	\$27,877	\$16,107	\$43,984
Wholesale Trade	\$0	\$41,789	\$63,891	\$105,679
Transportation & Warehousing	\$0	\$91,781	\$54,002	\$145,784
Retail Trade	\$0	\$18,851	\$211,558	\$230,409
Information	\$0	\$5,674	\$6,242	\$11,915
Finance & Insurance	\$0	\$89,652	\$83,092	\$172,744
Real Estate & Rental	\$0	\$159,740	\$48,518	\$208,258
Professional – Scientific & Technical Services	\$0	\$231,843	\$60,288	\$292,132
Management of Companies	\$0	\$0	\$0	\$0
Administrative & Waste Services	\$0	\$100,149	\$18,044	\$118,193
Educational Services	\$0	\$397	\$16,915	\$17,312
Health & Social Services	\$9,052,150	\$860	\$411,224	\$9,464,233
Arts – Entertainment & Recreation	\$0	\$3,248	\$32,687	\$35,935
Accommodation & Food Services	\$0	\$89,800	\$173,873	\$263,674
Other Services	\$0	\$26,277	\$72,611	\$98,887
Government & non-NAICS	\$0	\$16,222	\$20,060	\$36,282
<b>Total</b>	<b>\$9,052,150</b>	<b>\$972,779</b>	<b>\$1,346,548</b>	<b>\$11,371,478</b>

## The Impact of Construction at Boulder City Hospital on Local Expenditures

In addition to hospital operations spending, Boulder City Hospital had expenditures on new construction and remodeling in 2007. Table 7 summarizes the impact of construction expenditures at BCH on the local economy utilizing the most current IMPLAN output multipliers and data provided by Boulder City Hospital. Table 7 reveals that BCH spent \$433,446 locally on construction in 2007. Applying the IMPLAN output multiplier of 1.38 for the construction sector, the total expenditures created by construction at BCH was \$596,373. In other words, BCH generated an additional \$162,927 through induced and indirect economic activity during 2007. Table 7 also highlights the sectors impacted by the construction expenditures. For example, construction expenditures by BCH created an additional \$20,922 in spending by the Retail sector.

**Table 7 – Impact of Construction at Boulder City Hospital  
on Local Expenditures – 2007**

Sector	Local Expenditures Impacts (Dollars)			
	Direct Impact	Indirect Impact	Induced Impact	Total Impact
Agriculture, Forestry, Fishing & Hunting	\$0	\$119	\$196	\$315
Mining	\$0	\$46	\$1	\$47
Utilities	\$0	\$1,249	\$4,449	\$5,699
Construction	\$433,446	\$603	\$660	\$434,709
Manufacturing	\$0	\$9,611	\$2,415	\$12,026
Wholesale Trade	\$0	\$3,327	\$4,051	\$7,378
Transportation & Warehousing	\$0	\$3,794	\$2,753	\$6,546
Retail Trade	\$0	\$8,520	\$12,402	\$20,922
Information	\$0	\$379	\$699	\$1,078
Finance & Insurance	\$0	\$2,869	\$7,304	\$10,173
Real Estate & Rental	\$0	\$4,360	\$6,908	\$11,268
Professional – Scientific & Technical Services	\$0	\$17,224	\$2,968	\$20,193
Management of Companies	\$0	\$0	\$0	\$0
Administrative & Waste Services	\$0	\$1,577	\$1,030	\$2,607
Educational Services	\$0	\$11	\$843	\$855
Health & Social Services	\$0	\$0	\$17,552	\$17,553
Arts – Entertainment & Recreation	\$0	\$99	\$1,966	\$2,066
Accommodation & Food Services	\$0	\$1,313	\$11,254	\$12,567
Other Services	\$0	\$1,413	\$3,951	\$5,364
Government & non-NAICS	\$0	\$382	\$24,626	\$25,008
<b>Total</b>	<b>\$433,446</b>	<b>\$56,897</b>	<b>\$106,030</b>	<b>\$596,373</b>

## The Impact of Construction at Boulder City Hospital on Local Employment

Table 8 summarizes the impact of construction at BCH on local employment utilizing the most current IMPLAN employment multipliers and data provided by Boulder City Hospital. Table 8 reveals that 4 construction employees were employed by the hospital in 2007. Applying the IMPLAN employment multiplier of 1.35 for the construction sector, the total number of local jobs created by construction at BCH was 5. In other words, construction at BCH generated an additional job through induced and indirect economic activity during 2007.

**Table 8 – Impact of Construction at Boulder City Hospital  
on Local Employment – 2007**

Sector	Employment Impacts (Number of Jobs)			
	Direct Impact	Indirect Impact	Induced Impact	Total Impact
Agriculture, Forestry, Fishing & Hunting	0	0	0	0
Mining	0	0	0	0
Utilities	0	0	0	0
Construction	4	0	0	4
Manufacturing	0	0	0	0
Wholesale Trade	0	0	0	0
Transportation & Warehousing	0	0	0	0
Retail Trade	0	0	0	0
Information	0	0	0	0
Finance & Insurance	0	0	0	0
Real Estate & Rental	0	0	0	0
Professional – Scientific & Technical Services	0	0	0	0
Management of Companies	0	0	0	0
Administrative & Waste Services	0	0	0	0
Educational Services	0	0	0	0
Health & Social Services	0	0	0	0
Arts – Entertainment & Recreation	0	0	0	0
Accommodation & Food Services	0	0	0	0
Other Services	0	0	0	0
Government & non-NAICS	0	0	0	0
<b>Total</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>5</b>

The Impact of Construction at Boulder City Hospital on Local Income and Payroll

Table 9 documents the income and payroll impact of construction at Boulder City Hospital in 2007 utilizing the most current IMPLAN income multipliers and data provided by BCH. In 2007, the total payroll created by the hospital construction was \$219,573. Applying the IMPLAN income multiplier of 1.24 for the construction sector, the total payroll created by the construction at BCH was \$273,186. In other words, construction at BCH generated an additional \$53,613 in payroll through induced and indirect economic activity during 2007. Table 9 provides a detailed breakdown of the sectors gaining the additional payroll generated by construction at BCH. For example, the \$273 thousand in payroll created an additional \$9,879 in payroll in the Health & Social Services sector.

**Table 9 – Impact of Construction at Boulder City Hospital on Local Income and Payroll – 2007**

Sector	Income and Payroll Impacts (Dollars)			
	Direct Impact	Indirect Impact	Induced Impact	Total Impact
Agriculture, Forestry, Fishing & Hunting	\$0	\$29	\$102	\$132
Mining	\$0	\$13	\$0	\$13
Utilities	\$0	\$273	\$971	\$1,243
Construction	\$219,573	\$267	\$306	\$220,146
Manufacturing	\$0	\$1,742	\$387	\$2,129
Wholesale Trade	\$0	\$1,261	\$1,535	\$2,795
Transportation & Warehousing	\$0	\$1,615	\$1,297	\$2,912
Retail Trade	\$0	\$3,466	\$5,082	\$8,549
Information	\$0	\$100	\$150	\$250
Finance & Insurance	\$0	\$894	\$1,996	\$2,890
Real Estate & Rental	\$0	\$751	\$1,166	\$1,916
Professional – Scientific & Technical Services	\$0	\$8,888	\$1,448	\$10,336
Management of Companies	\$0	\$0	\$0	\$0
Administrative & Waste Services	\$0	\$671	\$433	\$1,104
Educational Services	\$0	\$5	\$406	\$411
Health & Social Services	\$0	\$0	\$9,879	\$9,879
Arts--Entertainment & Recreation	\$0	\$38	\$785	\$823
Accommodation & Food Services	\$0	\$491	\$4,177	\$4,668
Other Services	\$0	\$648	\$1,744	\$2,392
Government & non-NAICS	\$0	\$112	\$482	\$594
<b>Total</b>	<b>\$219,573</b>	<b>\$21,264</b>	<b>\$32,349</b>	<b>\$273,186</b>

## **Conclusion: The Contribution of Boulder City Hospital to the Local Economy**

The output, employment and income data presented in this report document the tremendous contribution of Boulder City Hospital to the local economy. The data and analysis presented in this report indicates that:

- Boulder City Hospital spent \$18.9 million locally on operations in 2007. When the expenditures by other businesses as a result of the hospital are included in the analysis, the hospital directly and indirectly generated a total of \$26.9 million in spending in the Boulder City area.
- Boulder City Hospital employed 198 individuals in 2007. When the employment created by other businesses as a result of the hospital is included in the analysis, the hospital directly and indirectly generated a total of 284 jobs in the local economy.
- Boulder City Hospital generated \$9.0 million in payroll for the year 2007. When the income created by other businesses as a result of the hospital is included in the analysis, the hospital was responsible for \$11.4 million in payroll for hospital employees and those employed in other businesses.
- Boulder City Hospital spent \$433 thousand locally on construction in 2007, which generated a total of \$596 thousand in expenditures throughout Boulder City.
- Construction at Boulder City Hospital resulted in the creation of 4 jobs in the local area in 2007. Including the employment created by other businesses as a result of hospital construction in the analysis, a total of 5 jobs were generated in the Boulder City area.
- Construction at Boulder City Hospital created \$220 thousand in payroll for 2007. When the payroll generated by other businesses as a result of the hospital construction is included in the analysis, new construction was responsible for a total of \$273 thousand in payroll for local residents.
- Finally, 35.8% of payroll attributed to the hospital or \$4.1 million was spent in 2007 on retail sales in the Boulder City area, resulting in additional tax revenue for the local service area.



## Appendix A: References and Data Sources

### References

Alward, G., et al. 1989. *Micro IMPLAN Software Manual*. Stillwater MN: University of Minnesota Press.

Doeksen, GA, et al. 1997. *Measuring the Importance of the Health Sector on the Local Economy: A Brief Literature Review and Procedures to Measure Local Impacts*. Mississippi State MS: Southern Rural Development Center. SRDC Publication Number 202.

ESRI Business Analyst Online. 2007. *1990 to 2000 Comparison Profiles for Boulder City, Nevada*.

ESRI Business Analyst Online. 2007. *Demographic and Income Profiles for Boulder City, NV, Clark County, NV, Nevada and the United States*.

ESRI Business Analyst Online. 2007. *Market Profiles for Boulder City, NV, Clark County, NV, Nevada and the United States*.

Miernyk, W.H. 1965. *The Element of Input-Output Analysis*. New York: Random House.

Minnesota IMPLAN Group, Inc. (MIG). 2000. *User's Guide, Analysis Guide, Data Guide: IMPLAN Professional Version 2.0 Social Accounting and Impact Analysis Software*, Second Edition. Stillwater MN: MIG. [www.implan.com](http://www.implan.com).

### Data Sources

#### **Table 1. Selected Demographic Data for Boulder City**

ESRI Business Analyst Online. 2007. *1990 to 2000 Comparison Profiles for Boulder City, Nevada*.

ESRI Business Analyst Online. 2007. *Demographic and Income Profiles for Boulder City, Nevada*.

#### **Table 2. Economic Indicators for Boulder City, Clark County, Nevada and the United States – 2007**

ESRI Business Analyst Online. 2007. *Demographic and Income Profiles for Boulder City, NV, Clark County, NV, Nevada and the United States*.

ESRI Business Analyst Online. 2007. *Market Profiles for Boulder City, NV, Clark County, NV, Nevada and the United States*.

#### **Table 4. Impact of Boulder City Hospital on Local Expenditures – 2007**

Minnesota IMPLAN Group, Inc. (MIG). 2007. "Boulder City Input-Output Data for 2006."  
Stillwater MN: MIG. [www.implan.com](http://www.implan.com)

***Table 5. Impact of Boulder City Hospital on Local Employment – 2007***

Minnesota IMPLAN Group, Inc. (MIG). 2007. "Boulder City Input-Output Data for 2006."  
Stillwater MN: MIG. [www.implan.com](http://www.implan.com)

***Table 6. Impact of Boulder City Hospital on Local Income and Payroll – 2007***

Minnesota IMPLAN Group, Inc. (MIG). 2007. "Boulder City Input-Output Data for 2006."  
Stillwater MN: MIG. [www.implan.com](http://www.implan.com)

***Table 7. Impact of Construction at Boulder City Hospital on Local Expenditures – 2007***

Minnesota IMPLAN Group, Inc. (MIG). 2007. "Boulder City Input-Output Data for 2006."  
Stillwater MN: MIG. [www.implan.com](http://www.implan.com)

***Table 8. Impact of Construction at Boulder City Hospital on Local Employment – 2007***

Minnesota IMPLAN Group, Inc. (MIG). 2007. "Boulder City Input-Output Data for 2006."  
Stillwater MN: MIG. [www.implan.com](http://www.implan.com)

***Table 9. Impact of Construction at Boulder City Hospital on Local Income and Payroll – 2007***

Minnesota IMPLAN Group, Inc. (MIG). 2007. "Boulder City Input-Output Data for 2006."  
Stillwater MN: MIG. [www.implan.com](http://www.implan.com)

## Appendix B: 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).