

**Nevada Office of Rural Health**  
**Center for Education and Health Services Outreach**  
**University of Nevada School of Medicine**

**The Impact of Hospitals and the Health  
Sector on the Nevada Economy**  
**2009 Edition**

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**CEHSO Technical Report**  
**September 2009**

The Center for Education and Health Services Outreach (CEHSO) at the University of Nevada School of Medicine is home to a number of education and outreach programs serving communities and medically underserved populations across Nevada. A wide-range of research, data collection, and policy analysis is conducted by CEHSO staff working under the auspices of several CEHSO units, including:

- Nevada State Office of Rural Health (SORH)
- Medical Education Council of Nevada (MECON)

SORH coordinates a number of programs serving the health care needs of rural Nevadans, including the Nevada Health Service Corps, Nevada Rural Hospital Flexibility Program, and the Rural Obstetrical Access Program. A key function of the SORH is rural-relevant data collection and research that supports health care providers and residents in rural Nevada, including the publication of the biennial *Nevada Rural and Frontier Health Data Book*.

MECON was established by the Nevada Legislature in 2003 to ensure that Nevada has an adequate, well-trained workforce to meet the needs of all residents of Nevada. MECON has been charged with conducting health workforce research identifying the health workforce needs for the provision of medical services in Nevada.

For more information about CEHSO programs, research and policy analysis, please visit the following website [www.medicine.nevada.edu/cehso/](http://www.medicine.nevada.edu/cehso/). For more information about this report, please contact:

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# **The Impact of Hospitals and the Health Sector on the Nevada Economy – 2009 Edition**

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**Prepared with support from the  
Nevada Rural Hospital Flexibility Program,  
Medical Education Council of Nevada (MECON), and the  
University of Nevada, Reno Center for Economic Development**

**September 2009**



# The Impact of Hospitals and Health Sector on the Nevada Economy – 2009 Edition

## Overview

*The Impact of Hospitals and the Health Sector on the Nevada Economy* documents the economic contribution of hospitals and other medical providers to the state's economy. The chartbook provides estimates of the direct and indirect impact of hospital and health sector activity and operations on payroll and employment in Nevada. Impacts are estimated at the county, regional, and state level in Nevada utilizing employment and payroll data for the year 2007. The analysis presented in this report reveals that Nevada's hospitals and other health service providers have a substantial impact on the state's economy – a contribution typically overlooked in public policy discussions of health care cost containment, access to care, and community benefits.

Hospitals and health service organizations are not only a major employer and source of income in their own right, they play a critical role in local and regional economic development by generating employment and income in a wide range of other businesses and contributing to the tax base at the state and local levels. The combination of an overall increasing population base and a rapidly growing elderly population in Nevada suggest that there will be steady growth in demand for hospital services and thus growth in employment in the health services sector in Nevada over the next decade

The most important economic impact of the health sector is in the direct jobs, salaries, and wages of health care employees. However, the purchasing power of hospitals, clinics and other health care organizations, and their employees ripples through the state's economy. For example, hospital workers earn wages and salaries above the norm for Nevada – when those employees purchase housing, food and clothing, cars and appliances, and services, they spur local and regional economic development in numerous ways. Finally, the taxes paid by direct and secondary employment in Nevada supports schools, community colleges and universities, local police and fire departments, cultural and arts programs, and a wide range of public services and amenities, such as community centers, parks, and recreational facilities.

This chartbook – *The Impact of Hospitals and the Health Sector on the Nevada Economy* – was undertaken by John Packham and Tabor Griswold at the University of Nevada School of Medicine and Tom Harris and Betsy Fadali of the University of Nevada, Reno. Utilizing an economic impact model developed specifically for the health care industry, the report examines the direct and secondary economic contribution of hospitals operations and other health service organizations. Utilizing data sources prepared by the federal government, input-output tables have been developed that enable researchers to examine and model the economic impact of employment and expenditures on a region's economy. The estimated

impact of hospitals and health sector on jobs and income in other businesses utilize employment and income multipliers specifically derived for Nevada. A complete description of the chartbook's methodology and data sources is contained in the appendix to this report.

## **Report Highlights**

Highlights of the data and analysis presented in the 2009 edition of *The Impact of Hospitals and the Health Sector on the Nevada Economy* include:

- Community hospitals in Nevada generated \$1.34 billion in payroll for the year 2007. When the income created by other businesses in Nevada as a result of hospital operating activity is included in the analysis, the hospital sector was responsible for a total of \$1.88 billion in payroll for hospital employees and those employed in other businesses.
- In 2007, the community hospital sector in Nevada employed 22,031 individuals living in Nevada in 2007. When the employment created by other businesses as a result of the hospital sector is included in the analysis, hospitals directly and indirectly generated a total of 36,526 jobs in the state.
- Community hospitals in urban counties of Nevada – Carson City, Clark County, and Washoe County – generated \$1.28 billion in payroll for the year in 2007. Urban community hospitals were responsible for a total of \$1.72 billion in payroll for hospital employees and those employed in other businesses in urban areas of the state.
- Hospitals in the fourteen rural and frontier counties of Nevada generated \$104.3 million in payroll for the year in 2007. The hospital sector was responsible for a total of \$131.9 million in payroll for hospital workers and those employed in other rural and frontier businesses in Nevada.
- Nevada's urban community hospitals employed 22,031 individuals living in 2007. Urban hospitals directly and indirectly generated a total of 36,526 jobs in Nevada.
- Rural hospitals in Nevada employed 1,958 individuals for the year 2007. The rural hospital sector directly and indirectly generated a total of 2,844 jobs in the state.
- Nevada's ten federally-designated Critical Access Hospitals (CAHs) generated \$59.9 million in payroll in 2007. When the income created by other local businesses as a result of CAH operating activities are included in the analysis, Nevada CAHs were responsible for \$75.1 million in payroll for hospital employees and those employed in other businesses in CAH communities.

- CAHs in Nevada employed 1,111 individuals living in the state of Nevada for the year 2007. When the employment created by other businesses as a result of CAHS are included in the analysis, CAH hospitals directly and indirectly generated a total of 1,582 jobs in their communities.
- The health sector in Nevada – hospitals, clinics, physician practices, nursing homes, pharmacies, and other medical and health service providers – generated \$5.64 billion in payroll in 2007. When the income created by other Nevada businesses as a result of the health sector are included in the analysis, the health sector in Nevada was responsible for \$7.87 billion in payroll for workers in the health sector and those employed in other businesses.
- The health sector in Nevada employed 94,070 individuals living in the state of Nevada for the year 2007. When the employment created by other businesses as a result of the health sector is included in the analysis, the health sector directly and indirectly generated a total of 146,579 jobs in Nevada.
- The employment impact of hospitals and other health sector businesses is diverse and affects almost every industrial sector in the state. For example, in 2007 the health sector in Nevada generated 4,160 additional jobs in the professional, scientific and technical services, 8,082 additional jobs in retail trade, and 5,665 additional jobs in accommodation and food services.
- In 2007, the health sector in Nevada generated \$136.7 million in additional payroll in the administrative and waste services, \$259.5 million in additional payroll in finance and insurance services, and \$112.6 of additional payroll in real estate and rental services.

In conclusion, a strong hospital industry and other health sector businesses provide essential medical services, improve the quality of life in a myriad of direct and indirect ways, and help Nevada attract and retain businesses and jobs. Major employers from other economic sectors will never locate nor stay in Nevada communities that lack strong hospital and health care systems. Policymakers must recognize that hospitals and strong health care systems play a key role in making Nevada an attractive place to settle, locate a business, or retire. Economic planning and development agencies frequently seek high-tech, manufacturing, and service industries that will create new, well-paying jobs. Across the state, Nevada hospitals and other medical providers are doing just that and should not be overlooked as economic engines in their own right.

**Table 1: Community Hospitals in Rural and Frontier Nevada – 2009**

Community Hospital / Region	Licensed Beds	Employees – FY 2007 (FTE)	Annual Payroll – FY 2007 (Dollars)
<b>Critical Access Hospitals (CAH)</b>			
Battle Mountain General Hospital	25	74	3,043,117
Boulder City Hospital	67	191	9,049,264
Carson Valley Medical Center – Gardnerville	23	166	9,157,729
Desert View Regional Medical Center – Pahrump	24	80	3,490,518
Humboldt General Hospital – Winnemucca	52	149	7,301,877
Incline Village Community Hospital	4	40	2,617,918
Mesa View Regional Hospital – Mesquite	25	130	7,161,361
Mount Grant General Hospital – Hawthorne	35	91	4,193,260
Pershing General Hospital – Lovelock	47	94	4,525,373
William Bee Ririe Hospital – Ely	25	96	9,315,313
CAH Hospitals Subtotal	327	1,111	59,855,730
<b>CAH-Eligible Hospitals</b>			
Banner Churchill Community Hospital – Fallon	40	372	21,432,075
Grover C. Dils Medical Center – Caliente	20	56	2,427,546
Northeastern Nevada Regional Hospital – Elko	75	207	11,191,521
Nye Regional Medical Center – Tonopah	44	50	1,853,181
South Lyon Medical Center – Yerington	63	162	7,536,643
CAH-Eligible Hospitals Subtotal	242	847	44,440,966
Rural & Frontier Hospitals Subtotal	569	1,958	104,296,696
Urban Hospitals Subtotal (See Table 2 on next page)	5,149	20,073	1,237,091,286
Nevada Hospitals – Total	5,718	22,031	1,341,387,982

Source: Center for Health Information Analysis (2009).



**Table 2: Community Hospitals in Urban Nevada – 2009**

Community Hospital / Region	Licensed Beds	Employees – FY 2007 (FTE)	Annual Payroll – FY 2007 (Dollars)
Carson City			
Carson Tahoe Regional Medical Center	144	941	54,718,698
Sierra Surgery Hospital	15	115	7,753,006
Clark County			
Centennial Hills Hospital – Las Vegas	165	N/A	N/A
Desert Springs Hospital Medical Center – Las Vegas	286	961	57,929,665
Mountain View Hospital – Las Vegas	235	831	62,938,664
North Vista Hospital and Medical Center – North Las Vegas	178	554	31,797,382
St. Rose Dominican Hospital, Rose de Lima – Henderson	145	417	29,523,324
St. Rose Dominican Hospital, San Martin – Las Vegas	141	755	45,012,468
St. Rose Dominican Hospital, Siena – Henderson	147	267	17,766,063
Southern Hills Hospital – Las Vegas	139	1,188	85,834,051
Spring Valley Hospital Medical Center – Las Vegas	210	697	46,216,990
Summerlin Hospital Medical Center – Las Vegas	300	1,263	77,971,249
Sunrise Hospital and Medical Center – Las Vegas	701	2,593	174,721,369
University Medical Center of Southern Nevada – Las Vegas	575	3,214	242,962,508
Valley Hospital Medical Center – Las Vegas	404	1,388	82,835,043
Washoe County			
Northern Nevada Medical Center – Sparks	100	383	21,423,248
Renown Regional Medical Center – Reno	808	2,424	124,570,274
Renown South Meadows Regional Medical Center – Reno	76	540	27,084,048
Saint Mary’s Regional Medical Center – Reno	380	1,540	46,033,236
Urban Hospitals Subtotal	5,149	20,073	1,237,091,286
Rural & Frontier Hospitals Subtotal (See Table 1)	569	1,958	104,296,696
Nevada Hospitals – Total	5,718	22,031	1,341,387,982

Source: Center for Health Information Analysis (2009).

**Table 3: Employment Impact of Community Hospitals in Nevada – 2007**

Community Hospital / Region	Employment Impact of Community Hospitals – 2007 (Number of Jobs)			
	Hospital Employment	Type II Employment Multiplier	Secondary Employment Impact	Total Employment Impact
<b>Critical Access Hospitals (CAH)</b>				
Battle Mountain General Hospital	74	1.18	13	87
Boulder City Hospital	191	1.66	126	316
Carson Valley Medical Center	166	1.44	73	239
Desert View Regional Medical Center	80	1.44	35	115
Humboldt General Hospital	149	1.37	55	204
Incline Village Community Hospital	40	1.57	23	63
Mesa View Regional Hospital	130	1.66	86	216
Mount Grant General Hospital	91	1.21	19	110
Pershing General Hospital	94	1.16	15	109
William Bee Ririe Hospital	96	1.28	27	123
CAH Hospitals Total	1,111	—	472	1,582
<b>CAH-Eligible Hospitals</b>				
Banner Churchill Community Hospital	372	1.64	238	610
Grover C. Dils Medical Center	56	1.38	21	78
Northeastern Nev Regional Hospital	207	1.38	79	286
Nye Regional Medical Center	50	1.44	22	72
South Lyon Medical Center	162	1.33	54	216
CAH-Eligible Hospitals Total	847	—	414	1,262
Rural & Frontier Hospitals Total	1,958	—	886	2,844
<b>Urban Hospitals</b>				
Carson City	1,057	1.67	708	1,765
Clark County	14,129	1.66	9,325	23,455
Washoe County	4,887	1.57	2,785	7,672
Urban Hospitals Total	20,073	—	12,818	32,892
Nevada Hospitals – Total	22,031	1.66	14,495	36,526

Note: The secondary statewide employment impacts were calculated separately from those impacts calculated at the facility and county level. Thus the figures for all Nevada hospitals are not the sum of the county and regional totals.

**Table 4: Payroll Impact of Community Hospitals in Nevada – 2007**

Community Hospital / Region	Payroll Impact of Community Hospitals – 2007 (Dollars)			
	Hospital Payroll	Type II Payroll Multiplier	Secondary Payroll Impact	Total Payroll Impact
<b>Critical Access Hospitals (CAH)</b>				
Battle Mountain General Hospital	3,043,117	1.10	304,312	3,347,429
Boulder City General Hospital	9,049,264	1.38	3,438,720	12,487,984
Carson Valley Medical Center	9,157,729	1.25	2,289,432	11,447,161
Desert View Regional Medical Center	3,490,518	1.19	663,198	4,153,716
Humboldt General Hospital	7,301,877	1.24	1,752,450	9,054,327
Incline Village Community Hospital	2,617,918	1.41	1,073,346	3,691,264
Mesa View Regional Hospital	7,161,361	1.38	2,721,317	9,882,678
Mount Grant General Hospital	4,193,260	1.14	587,056	4,780,316
Pershing General Hospital	4,525,373	1.11	497,791	5,023,164
William Bee Ririe Hospital	9,315,313	1.20	1,863,063	11,178,376
CAH Total	59,855,730	—	15,190,685	75,046,415
<b>CAH-Eligible Hospitals</b>				
Banner Churchill Community Hospital	21,432,075	1.31	6,643,943	28,076,018
Grover C. Dils Medical Center	2,427,546	1.13	315,581	2,743,127
Northeastern Nev Regional Hospital	11,191,521	1.29	3,245,541	14,437,062
Nye Regional Medical Center	1,853,181	1.19	352,104	2,205,285
South Lyon Medical Center	7,536,643	1.25	1,884,161	9,420,804
CAH-Eligible Hospitals Total	44,440,966	—	12,441,330	56,882,296
Rural & Frontier Hospitals Total	104,296,696	—	27,632,015	131,928,711
<b>Urban Hospitals</b>				
Carson City	62,471,704	1.38	23,739,248	86,210,952
Clark County	955,508,776	1.39	372,648,423	1,328,157,199
Washoe County	219,110,806	1.41	89,453,214	308,946,236
Urban Hospitals Total	1,237,091,286	—	481,840,885	1,723,341,387
Nevada Hospitals – Total	1,341,387,982	1.40	537,418,052	1,878,806,034

Note: The secondary statewide payroll impacts were calculated separately from those impacts calculated at the facility and county level. Thus the figures for all Nevada hospitals are not the sum of the county and regional totals.

**Table 5: Health Sector Employment in Nevada by County – 2007**

Region/County	Health Sector Employment – 2007 (Number of Jobs)					
	Hospital	Physicians, Dentists & Other Professionals	Nursing & Protective Care	Pharmacies	Other Medical & Health Services	Total – Health Sector
Rural and Frontier						
Churchill County	400	365	167	71	65	1,068
Douglas County	177	617	214	59	193	1,260
Elko County	408	522	147	43	129	1,249
Esmeralda County	0	0	0	0	0	0
Eureka County	0	55	0	15	0	70
Humboldt County	183	156	4	4	25	372
Lander County	83	4	0	8	1	96
Lincoln County	85	4	15	2	0	106
Lyon County	205	160	178	32	84	659
Mineral County	128	46	28	0	0	202
Nye County	106	289	59	67	82	603
Pershing County	122	6	3	1	12	144
Storey County	0	0	0	0	0	0
White Pine County	197	59	161	33	10	460
Rural & Frontier Total	2,094	2,283	976	335	601	6,289
Urban						
Carson City	1,306	1,220	545	189	428	3,688
Clark County	18,873	23,069	6,010	7,355	10,093	65,400
Washoe County	6,644	6,007	2,222	1,024	2,796	18,693
Urban Total	26,823	30,296	8,777	8,568	13,317	87,781
Nevada – Total	28,917	32,579	9,753	8,903	13,918	94,070

Source: Nevada Department of Employment, Training, and Rehabilitation (2009). Hospital employment figures are different from those presented in Tables 1 through 3 due to a different data source and estimation methodology.

**Table 6: Health Sector Payroll in Nevada by County – 2007**

Region/County	Health Sector Payroll – 2007 (Thousands of Dollars)					
	Hospital	Physicians, Dentists & Other Professionals	Nursing & Protective Care	Pharmacies	Other Medical & Health Services	Total – Health Sector
Rural and Frontier						
Churchill County	26,162	25,017	2,661	2,329	2,853	59,022
Douglas County	11,052	37,414	5,766	1,893	10,610	66,735
Elko County	20,015	32,416	2,159	1,060	5,308	60,958
Esmeralda County	0	0	0	0	0	0
Eureka County	0	6,377	0	78	0	6,455
Humboldt County	8,977	7,760	22	57	890	17,706
Lander County	4,071	132	0	203	30	4,436
Lincoln County	4,170	255	276	41	0	4,742
Lyon County	8,619	7,879	3,643	1,833	3,075	25,049
Mineral County	6,279	2,380	872	0	0	9,531
Nye County	6,897	12,509	1,134	2,041	4,301	26,882
Pershing County	5,985	279	7	3	562	6,836
Storey County	0	0	0	0	0	0
White Pine County	9,664	2,427	6,914	702	367	20,074
Rural & Frontier Subtotal	111,891	134,845	23,454	10,240	27,996	308,426
Urban						
Carson City	81,562	100,098	10,788	5,742	23,847	222,037
Clark County	1,362,670	1,642,150	129,018	246,788	566,765	3,947,391
Washoe County	403,110	515,510	38,578	36,272	172,935	1,166,405
Urban Subtotal	1,847,342	2,257,758	178,384	288,802	763,547	5,335,833
Nevada – Total	1,959,233	2,392,603	201,838	299,042	791,543	5,644,259

Source: Nevada Department of Employment, Training, and Rehabilitation (2009). Hospital payroll figures are different from those presented in Tables 1, 2, and 4 due to a different data source and estimation methodology.

**Table 7: Employment Impact of the Health Sector in Nevada by County – 2007**

Region/County	Employment Impact of the Health Sector – 2007 (Number of Jobs)			
	Health Sector Employment	Type II Employment Multiplier	Secondary Employment Impact	Total Employment Impact
<b>Rural and Frontier</b>				
Churchill County	1,068	1.50	534	1,602
Douglas County	1,260	1.34	428	1,688
Elko County	1,249	1.33	412	1,661
Esmeralda County	0	—	0	0
Eureka County	70	1.23	16	86
Humboldt County	372	1.34	126	498
Lander County	96	1.17	16	112
Lincoln County	106	1.22	23	129
Lyon County	659	1.24	158	817
Mineral County	202	1.19	38	240
Nye County	603	1.28	169	772
Pershing County	144	1.16	23	167
Storey County	0	—	0	0
White Pine County	460	1.23	106	566
Rural & Frontier Subtotal	6,289	—	2,049	8,338
<b>Urban</b>				
Carson City	3,688	1.57	2,102	5,790
Clark County	65,400	1.55	35,970	101,370
Washoe County	18,693	1.55	10,281	28,974
Urban Subtotal	87,781	—	48,353	136,134
Nevada – Total	94,070	1.56	52,509	146,579

Note: The secondary statewide employment impacts were calculated separately from those impacts calculated at the county level. Thus the figures for the entire Nevada health sector are not the sum of the county and regional totals.

**Table 8: Payroll Impact of the Health Sector in Nevada by County – 2007**

Region/County	Payroll Impact of the Health Sector – 2007 (Dollars)			
	Health Sector Payroll	Type II Income Multiplier	Secondary Payroll Impact	Total Payroll Impact
Rural and Frontier				
Churchill County	59,022,000	1.30	17,706,600	76,728,600
Douglas County	66,735,000	1.23	15,349,050	82,084,050
Elko County	60,958,000	1.25	15,239,500	76,197,500
Esmeralda County	0	—	0	0
Eureka County	6,455,000	1.09	580,950	7,035,950
Humboldt County	17,706,000	1.23	4,072,380	21,778,380
Lander County	4,436,000	1.10	443,600	4,879,600
Lincoln County	4,742,000	1.14	663,880	5,405,880
Lyon County	25,049,000	1.21	5,260,290	30,309,290
Mineral County	9,531,000	1.13	1,239,030	10,770,030
Nye County	26,882,000	1.19	5,107,580	31,989,580
Pershing County	6,836,000	1.11	751,960	7,587,960
Storey County	0	—	0	0
White Pine County	20,074,000	1.18	3,613,320	23,687,320
Rural & Frontier Subtotal	308,426,000	—	70,028,140	378,454,140
Urban Counties				
Carson City	222,037,000	1.34	75,492,580	297,529,580
Clark County	3,947,391,000	1.39	1,539,482,490	5,486,873,490
Washoe County	1,166,405,000	1.39	454,897,950	1,621,302,950
Urban Subtotal	5,335,833,000	—	2,069,873,020	7,405,706,020
Nevada – Total	5,644,259,000	1.39	2,223,323,099	7,867,582,099

Note: The secondary statewide payroll impacts were calculated separately from those impacts calculated at the county level. Thus the figures for the entire Nevada health sector are not the sum of the county and regional totals.

**Table 9: Distribution of Secondary Hospital Employment Impacts  
Across Other Industrial Sectors in Nevada – 2007**

Sector	Secondary Hospital-Sector Employment Impacts – 2007 (Number of Jobs)		
	Indirect	Induced	Total
Total Secondary Impact – Hospital Sector	5,612	8,883	14,495
Accommodation & Food Services	344	1,103	1,447
Administrative & Waste Services	1,004	300	1,304
Agriculture, Forestry, & Fishing	11	17	28
Arts, Entertainment & Recreation Services	24	268	292
Construction	80	54	134
Educational Services	1	148	149
Finance & Insurance Services	246	503	750
Health & Social Services	410	1,829	2,239
Information Services	67	152	219
Management of Companies	137	26	163
Manufacturing	165	139	305
Mining	5	8	14
Professional, Scientific & Technical Services	919	350	1,269
Real Estate & Rental	1,382	496	1,877
Trade, Retail	96	2,080	2,176
Trade, Wholesale	163	285	448
Transportation & Warehousing	177	273	450
Utilities	32	36	68
Other Services	238	733	971
Government & Non-NAICS	110	83	193



**Table 10: Distribution of Secondary Hospital Payroll Impacts  
Across Other Industrial Sectors in Nevada – 2007**

Sector	Secondary Hospital-Sector Payroll Impacts – 2007 (Dollars)		
	Indirect	Induced	Total
Total Secondary Impact – Hospital Sector	209,831,677	327,586,375	537,418,052
Accommodation & Food Services	11,188,800	29,780,226	40,969,025
Administrative & Waste Services	22,864,247	7,649,471	30,513,718
Agriculture, Forestry, & Fishing	126,108	213,324	339,432
Arts, Entertainment & Recreation Services	613,392	7,519,012	8,132,405
Construction	4,376,480	3,299,767	7,676,247
Educational Services	32,067	3,823,373	3,855,439
Finance & Insurance Services	11,952,326	26,013,625	37,965,951
Health & Social Services	21,194,642	88,592,151	109,786,794
Information Services	3,591,164	6,958,317	10,549,480
Management of Companies	19,253,582	3,625,260	22,878,842
Manufacturing	9,844,927	6,699,931	16,544,858
Mining	245,537	294,451	539,987
Professional, Scientific & Technical Services	39,385,899	19,938,834	59,324,733
Real Estate	25,368,459	9,633,593	35,002,052
Trade, Retail	2,847,163	59,652,670	62,499,832
Trade, Wholesale	9,917,881	17,284,726	27,202,608
Transportation & Warehousing	7,096,131	11,272,351	18,368,482
Utilities	3,602,177	3,913,920	7,516,097
Other Services	8,060,638	15,619,127	23,679,765
Government & Non-NAICS	8,270,058	5,802,246	14,072,304

**Table 11: Distribution of Secondary Health Sector Employment Impacts  
Across Other Industrial Sectors in Nevada – 2007**

Sector	Secondary Health Sector Employment Impacts – 2007 (Number of Jobs)		
	Indirect	Induced	Total
Total Secondary Impact – Health Sector	19,206	33,303	52,509
Accommodation & Food Services	1,530	4,135	5,665
Administrative & Waste Services	3,992	1,125	5,117
Agriculture, Forestry, & Fishing	19	64	82
Arts, Entertainment & Recreation Services	144	1,006	1,150
Construction	294	202	496
Educational Services	11	553	564
Finance & Insurance Services	992	1,887	2,879
Health Sector	1,382	6,857	8,239
Information Services	342	570	912
Management of Companies	357	97	454
Manufacturing	908	522	1,430
Mining	21	31	52
Professional, Scientific & Technical Services	2,849	1,311	4,160
Real Estate & Rental	3,411	1,858	5,269
Trade, Retail	284	7,797	8,082
Trade, Wholesale	590	1,068	1,658
Transportation & Warehousing	835	1,023	1,859
Utilities	88	136	225
Other Services	767	2,749	3,516
Government & Non-NAICS	389	311	699

**Table 12: Distribution of Secondary Health Sector Payroll Impacts  
Across Other Industrial Sectors in Nevada – 2007**

Sector	Secondary Health Sector Payroll Impacts – 2007 (Dollars)		
	Indirect	Induced	Total
Total Secondary Impact – Health Sector	850,221,293	1,373,101,806	2,223,323,099
Accommodation & Food Services	51,559,972	124,825,960	176,385,932
Administrative & Waste Services	104,591,912	32,063,310	136,655,222
Agriculture, Forestry, & Fishing	254,172	894,163	1,148,335
Arts, Entertainment & Recreation Services	3,947,618	31,516,480	35,464,098
Construction	17,975,062	13,831,209	31,806,271
Educational Services	324,564	16,025,941	16,350,505
Finance & Insurance Services	60,592,680	109,037,976	169,630,656
Health Sector	79,418,635	371,340,328	450,758,995
Information Services	20,117,808	29,166,284	49,284,092
Management of Companies	56,001,116	15,195,540	71,196,656
Manufacturing	58,651,048	28,083,244	86,734,292
Mining	1,172,461	1,234,212	2,406,673
Professional, Scientific & Technical Services	164,453,424	83,575,056	248,028,480
Real Estate & Rental	72,205,704	40,379,900	112,585,604
Trade, Retail	9,418,951	250,038,448	259,457,399
Trade, Wholesale	40,029,584	72,450,176	112,479,760
Transportation & Warehousing	36,836,580	47,248,872	84,085,452
Utilities	11,037,182	16,405,477	27,442,659
Other Services	29,085,444	65,468,696	94,554,140
Government & Non-NAICS	32,547,344	24,320,534	56,867,878

## Appendix : Economic Impact Analysis Methodology and Report References

### The Multiplier Effect

An important method of assessing the impact of businesses and industry sectors on local economies is through the estimation of multiplier effects. Multiplier effects are a simplified and compact way of representing the effects of business and employee expenditures 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 Clark County or the State of Nevada. This recycling creates new job opportunities and additional wages for residents and business establishments.

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 13 with examples from the hospital industry. The *direct multiplier effect* is based on an industry’s initial economic impact on the region’s economy.

**Table 13: Illustration of Economic Impact Multipliers**

Type of Multiplier	Direct	Indirect	Induced
<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
<b>Output Multiplier</b>	Hospital expenditures	Hospital Supplier Expenditures	Local retail and service expenditures related to hospital spending

For example, if a hospital has annual expenditures of \$5 million on goods and services to support hospital operating activities, 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, indirect effects would include hospital purchases of medical supplies, local laundry services, food, and other contracted services. Finally, the *induced multiplier effect* includes both the industry-to-industry transactions and household purchases, including employee spending. The total economic impact is thus defined as the direct plus indirect and induced economic impacts.

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.

### **Model and Data Used to Estimate Multipliers**

The economic impacts 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 originally developed 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.

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).

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