

**An Analysis of the Economic Impact of the Hard Rock Mining
Sector on the Elko Micropolitan Statistical Area**



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Sector on the Elko Micropolitan Statistical Area**

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SUMMARY

In 2003, the U.S. Bureau of Census defined a new classification of counties which are designated as “Micropolitan Statistical Areas.” To be classified as a Micropolitan Statistical Area, a group of counties must have a community of at least 10,000 to 49,999 people, be distant from a large city, and have proportionately few residents commuting outside the area. The Northeastern Nevada counties of Elko and Eureka comply with these requirements and have been designated as the Elko Micropolitan Statistical Area (S.A.).

This report details the economic impacts of the Hard Rock Mining Sector on the Elko Micropolitan S.A. The economic sectors comprising the Hard Rock Mining Sector are the Gold, Silver, and Other Metal Ore Mining Sector and the Support Activities for Other Mining Sector. These are sectors designated with IMPLAN Pro Software.

The Nevada Mining Industry

- The Elko Micropolitan S.A. is the primary area of the state’s mining industry. During First Quarter 2007, the Elko Micropolitan S.A. employed 5,202 mining employees, which consists of 44.07% of total state of Nevada mining employment. Also for the Elko Micropolitan S.A., the mineral industry accounted for 20.42 percent of total area employment.
- As for the Gold and Silver Ore Mining Sector in First Quarter 2007, employment was 5,099 employees in the Elko Micropolitan S.A. Elko Micropolitan S.A. made up 58.93 percent of total State of Nevada Gold and Silver Ore Mining Sector employment.
- As for the Support Activities for Metal Mining Sector employment, the Elko Micropolitan S.A. had 782 employees in First Quarter 2007. This was 74.90 percent of total State of Nevada employment in the Support Activities for Metal Mining Sector employment. This sector’s employment data may be somewhat under reported given Eureka County employment in this sector was not disclosed.

Concepts of Economic Multipliers: Income and Economic Multipliers

- Export sales bring dollars to the county economy which provides for future economic growth.
- Import sales act as leakages from the county economy.
- Changes in economic activity by the Hard Rock Mining Sector will impact the economic activity of the Elko County economy.
- A measure of the economic effects of the changes in the Elko County economy from changes in economic activity by the Hard Rock Mining Sector is called the multiplier effect.
- To derive these multiplier effects and county level sectoral output, employment, and labor income levels, the U.S. Forest Service input-output model IMPLAN was used.

Sectoral Values of Output, Employment, and Labor Income

- Detailed economic data for this analysis was obtained from the IMPLAN microcomputer data base. The latest data was for 2004.
- In 2004, there were 146 economic sectors in the Elko Micropolitan S.A. economy.
- In 2004, the Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. recorded a value of output of \$1.58 billion which was 43.77 percent of total Elko Micropolitan S.A. value of output. This ranks the Gold, Silver, and Other Metal Ore Mining Sector first in value of output of the Elko Micropolitan S.A.'s 146 economic sectors.
- In 2004, the Support Activities for Other Mining Sector in the Elko Micropolitan S.A. recorded a value of output of \$92.9 million which was 2.57 percent of total Elko Micropolitan S.A. value of output. This ranks the Support Activities for Other Mining Sector seventh in value of output of the Elko Micropolitan S.A.'s 146 economic sectors.
- In 2004, the Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. had 3,958 employees which were 16.17 percent of total Elko Micropolitan S.A. employment. This ranks the Gold, Silver, and Other Metal Ore Mining Sector first among the Elko Micropolitan S.A.'s 146 economic sectors in sectoral employment.
- In 2004, the Support Activities for Other Mining Sector in the Elko Micropolitan S.A. had 335 employees which were 1.37 percent of total Elko Micropolitan S.A. employment. This ranks the Support Activities for Other Mining Sector sixteenth among the Elko Micropolitan S.A.'s 146 economic sectors in sectoral employment.
- Sectoral labor income is the summation of sectoral employee compensation and proprietor income.
- In 2004, the Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. had labor income of \$346.2 million which was 30.80 percent of total Elko Micropolitan S.A. labor income. This ranks the Gold, Silver, and Other Metal Ore Mining Sector first among the Elko Micropolitan S.A.'s 146 economic sectors in labor income.
- In 2004, the Support Activities for Other Mining Sector in the Elko Micropolitan S.A. had labor income of \$34.4 million which was 3.06 percent of total Elko Micropolitan S.A. labor income. This ranks the Support Activities for Other Mining Sector seventh among the Elko Micropolitan S.A.'s 146 economic sectors in labor income.

Sectoral Value of Exports and Imports

- Export sales bring dollars into the county economy for future economic growth. Economic development activities to assist exporting sectors are called export enhancement economic development activities.

- Imports are leakages outside the county economy and as such reduce future economic development growth. Economic development activities to reduce imports are called import substitution economic development activities.
- In 2004, the Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. had export sales of \$1.44 billion which was 67.89 percent of total Elko Micropolitan S.A. exports. This ranks the Gold, Silver, and Other Metal Ore Mining Sector the highest in export sales of the Elko Micropolitan S.A.'s 146 economic sectors. This shows the importance of the Gold, Silver, and Other Metal Ore Mining Sector as a basic economic sector in the Elko Micropolitan S.A.
- In 2004, the Support Activities for Other Mining Sector in the Elko Micropolitan S.A. had export sales of \$36.8 million which was 1.73 percent of total Elko Micropolitan S.A. exports. This ranks the Support Activities for Other Mining Sector the fifth highest in export sales of the Elko Micropolitan S.A.'s 146 economic sectors. This shows the importance of the Support Activities for Other Mining Sector as a basic economic sector in the Elko Micropolitan S.A.
- In 2004, the Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. imported \$460.4 million in imports which was 47.39 percent of total Elko Micropolitan S.A. industry imports. This ranks the Gold, Silver, and Other Metal Ore Mining Sector first of the Elko Micropolitan S.A.'s 144 importing industry sectors.
- In 2004, the Support Activities for Other Mining Sector in the Elko Micropolitan S.A. imported \$25.9 million in imports which was 2.66 percent of total Elko Micropolitan S.A. industry imports. This ranks the Support Activities for Other Mining Sector fifth highest of the Elko Micropolitan S.A.'s 144 importing industry sectors.
- In 2004, the Elko Micropolitan S.A. economy realized \$213 million more in imports than exports. However, the Hard Rock Mining Sector, being highest in exports sales, had \$952 million more in exports than imports. The Hard Rock Mining Sector in the Elko Micropolitan S.A. has been a positive sectoral contributor to the balance of trade in the Elko Micropolitan S.A.

Sectoral Location Quotients

- Location quotients are an analytical tool used by regional economists to estimate the economic base of an economy.
- Location quotients measure the degree of concentration of the Elko Micropolitan S.A. economic sectors.
- A location quotient greater than 1.25 indicates an exporting sector or a sector that is part of the Elko Micropolitan S.A.'s economic base.

- The Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. ranked first in sectoral location quotient value.
- The Support Activities for Other Mining Sector in the Elko Micropolitan S.A. ranked second in sectoral location quotient value.
- The location quotient value of 1,882.61 signifies that the Gold, Silver, and Other Metal Ore Mining Sector is a major contributor to the economic base of the Elko Micropolitan S.A.
- The location quotient value of 258.06 signifies that the Support Activities for Other Mining Sector is a major contributor to the economic base of the Elko Micropolitan S.A.

Inter-industry Analysis

- Inter-industry or input-output analysis shows the economic interactions and linkages between sectors in the Elko Micropolitan S.A. economy.
- The IMPLAN (Minnesota IMPLAN Group, Inc. 2004) microcomputer input-output software was used to derive the economic, employment, and labor income impacts of the Hard Rock Mining Sector.
- In First Quarter 2007, the Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. had an estimated value of production level of \$2.03 billion, hired 5,099 employees, and paid labor income of \$452.8 million.
- In First Quarter 2007, the Support Activities for Other Mining Sector in the Elko Micropolitan S.A. had an estimated value of production level of \$221.2 million, hired 782 employees, and paid labor income of \$82.5 million.
- Given the economic inter-linkage and multiplier effect, total output impacts to the Elko Micropolitan S.A. economy from activities by the Gold, Silver, and Other Metal Ore Mining Sector was \$2.63 billion. Total employment and labor income impacts in the Elko Micropolitan S.A. economy from activity of the Gold, Silver, and Other Metal Ore Mining Sector was 9,433 jobs and \$624.9 million in labor income.
- Given the economic inter-linkage and multiplier effect, total output impacts to the Elko Micropolitan S.A. economy from activities by the Support Activities for Other Mining Sector was \$292.0 million. Total employment and labor income impacts in the Elko Micropolitan S.A. economy from activity of the Support Activities for Other Mining Sector was 1,533 jobs and \$107.2 million in labor income.
- In total, in First Quarter 2007 the Hard Rock Mining Sector in the Elko Micropolitan S.A. had an estimated value of production level of \$2.25 billion, hired 5,881 employees, and paid labor income of \$535.3 million.

- Given the economic inter-linkage and multiplier effect, total output impacts to the Elko Micropolitan S.A. economy from activities by the Hard Rock Mining Sector was \$2.92 billion. Total employment and labor income impacts in the Elko Micropolitan S.A. economy from activity of the Hard Rock Mining Sector was 10,966 jobs and \$732.2 million in labor income.
- The 5,881 jobs directly created by the Hard Rock Mining Sector are distributed amongst 22 occupation categories. The top three occupation categories for the hard rock mining industry are Construction and Extraction Occupations, Installation, Maintenance and Repair Occupations, and Production Occupations.
- The top three occupation categories for the 5,085 jobs indirectly created by the Hard Rock Mining Sector are Construction and Extraction Occupations, Installation, Maintenance and Repair Occupations, and Production Occupations. Also indirect occupations such as Buildings and Grounds Cleaning and Maintenance Occupations, Office and Administrative Support Occupations, and Architecture and Engineering Occupations are impacted by 14; 251; and 245 jobs; respectively.
- Given the economic linkages of the Hard Rock Mining Sector, any changes in production levels by the Hard Rock Mining Sector greatly impacts the Elko Micropolitan S.A. economy. Also lost occupations from closure of mining operations would not be hired into other Elko Micropolitan S.A. sectors and wages would not equal those in the mining industry.

Micropolitan Study Area

In 2003, the U.S. Bureau of Census developed a new Core Based Statistical Area (CBSA). The newly designated CBSA was the Micropolitan Statistical Area. A Micropolitan Statistical Area is a CBSA associated with at least one urban cluster with a population of at least 10,000. The central county plus adjacent counties with a high degree of interaction comprise the area.

The Elko Micropolitan S.A. is comprised of Elko and Eureka Counties. Table 1 shows by the resident adjustment factor why Elko and Eureka counties make up the Elko Micropolitan S.A. In 2005, earnings by place of work, which was people working in Elko and Eureka Counties, was \$924,344,000 and \$322,994,000, respectively. However, when earnings are adjusted from where people work to where people live or Place of Residence Earnings, Place of Residence Earnings for Elko and Eureka Counties were \$1,025,905,000 and \$27,467,000, respectively, in 2005. The reason for such a dramatic change in Place of Work and Place of Residence values is the Residence Adjustment Values of \$195,720,000 net inflow to Elko County and \$260,446,000 net outflow from Eureka County. The reason for this inflow and outflow in funds is that the gold mines are located in Eureka County and where mining workers live is in Elko County.

Table 1. Statistics for Elko Micropolitan S.A., 2005.

County	Population	Place of Work (\$1,000)	Place of Residence (\$1,000)	Residence Adjustment (\$1,000)
Elko	45,578	924,344	1,025,905	195,720
Eureka	1,412	322,994	27,467	-260,446

Source: U.S. Department of Commerce. "Regional Economic Information System." Bureau of Economic Analysis: Washington, D.C., 2007.

Therefore, for the Elko Micropolitan S.A., the town of Elko has a population of 18,183 in 2006 (State of Nevada Demographic, 2007) and the community serves as a cluster for the rural areas of Elko and Eureka Counties. Also given the residence adjustment inflow to Elko County from gold mining operations in Eureka County, these two counties conform to the CBSA criteria of a Micropolitan S.A.

The Nevada Mining Industry

The mineral industry has been an important player in Nevada's statehood and economic structure. From 1860 to 1890, the Comstock Lode in Virginia City initiated the state's mineral industry growth and many historians acknowledge the Comstock Lode for helping the territory of Nevada to become the state of Nevada. During the turn of the century, gold and silver mining towns, such as Tonopah and Goldfield, boomed along with the copper mining towns of Ely, Ruth and McGill. The second renaissance of Nevada's mineral industry occurred in the 1980's with the development of numerous large-scale gold mines operating in central, northern and eastern Nevada.

Although Nevada's mining industry faces numerous technical and regulatory challenges, the industry has developed a large, efficient and economically viable capital base that is fundamentally sound and sustainable well into the future.

Largely because of this investment and favorable geology, Nevada is currently the fourth largest gold producer in the world behind South Africa, Australia and China. As shown in Table 2, with 2005 gold production of just over 6.9 million ounces, Nevada accounts for 85 percent of U.S. production and approximately 8.8 percent of world production.

Table 2. Proportionate Share of World Production of Gold, 2005.

Areas	Proportionate Share
South Africa	12.2%
Australia	10.3%
China	9.1%
State of Nevada	8.8%
Canada	4.7%
Rest of U.S.	1.5%
Other Areas	53%
TOTAL	100%

Source: "Economic Overview of the Nevada Mining Industry: 2005." Nevada Mining Association: Reno, Nevada, 2006.

In First Quarter 2007, the mining industry in the state of Nevada accounted for 11,803 jobs. With an average weekly salary during First Quarter 2007 for all mining of \$1,378 and metal mining of \$1,480, mining is considered to be the second best paying industry in the state,

behind Public Administration (State of Nevada Department of Employment, Training and Rehabilitation, 2007).

Table 3 shows the distribution of mining industry employment throughout Nevada's 17 counties during First Quarter 2007. From Table 3, only 0.93 percent of total state employment is in the mining industry. However, when examining individual Nevada counties, the importance of the mining industry is not uniform.

Table 3. Nevada County Employment, County Proportionate Share of Total State Mining Sector Employment and Proportionate Share of County Mining Employment, First Quarter 2007.

County	Mining Employment	% of Total State Mining Employment	% Mining Employment of Total County Employment
	(number)	(%)	(%)
Carson City	0	0.00%	0.00%
Churchill	D	D	D
Clark	491	4.16%	0.054%
Douglas	D	D	D
Elko	1,366	11.57%	6.62%
Esmeralda	D	D	D
Eureka	3,836	32.50%	79.27%
Humboldt	1,283	10.87%	17.56%
Lander	1,053	8.92%	42.70%
Lincoln	10	0.08%	0.41%
Lyon	102	0.86%	0.00%
Mineral	D	D	D
Nye	923	7.82%	7.25%
Pershing	443	3.75%	24.53%
Storey	90	0.76%	3.37%
Washoe	268	2.27%	0.12%
White Pine	689	5.84%	17.89%
Elko Micropolitan S.A.*	5,202	44.07%	20.42%
Nevada Total:	11,803	100.00%	0.93%

'D' stands for disclosure.

*Elko Micropolitan S.A. stands for Elko Micropolitan Statistical Area.

Source: Nevada Department of Employment, Training and Rehabilitation: Carson City, Nevada, 2007.

Table 3 also shows the importance of mining industry employment to individual county and Micropolitan S.A. economies. In First Quarter 2007, approximately 20.42 percent of total Elko Micropolitan S.A. employment is in this sector. Five of Nevada's seventeen counties

(Eureka, Humboldt, Lander, Pershing and White Pine) have proportionate shares of total county employment above ten percent in the mining industry, with approximately 80 percent of Eureka County's total employment in the Mining Sector.

Table 4 shows the distribution of gold and silver mining employment throughout Nevada's 17 counties and the Elko Micropolitan S.A. during First Quarter 2007. The counties where the major gold mining operations occur (Elko, Eureka, Humboldt, Lander and Pershing Counties) make up approximately 68 percent of total state gold and silver mining sector employment. The gold and silver mining industry employs 5,099 workers in the Elko Micropolitan S.A. Additionally, Elko County serves as a place of residence for mine workers who work in surrounding Eureka County, which impacts the county economy.

Table 4. Nevada County Employment, County Proportionate Share of Total Gold and Silver Ore Mining Sector Employment and Proportionate Share of Total County Employment, First Quarter 2007.

County	Gold and Silver Mining Employment (number)	% of Total State Gold and Silver Mining Employment (%)	% Gold and Silver Mining Employment of Total County Employment (%)
Carson City	0	0.00%	0.00%
Churchill	0	0.00%	0.00%
Clark	9	0.10%	0.001%
Douglas	0	0.00%	0.00%
Elko	1,263	14.60%	6.12%
Esmeralda	D	D	D
Eureka	3,836	44.35%	79.27%
Humboldt	1,192	13.78%	16.32%
Lander	932	10.77%	37.79%
Lincoln	D	D	D
Lyon	0	0.00%	0.00%
Mineral	D	D	D
Nye	D	D	D
Pershing	316	3.65%	17.50%
Storey	D	D	D
Washoe	127	1.47%	0.06%
White Pine	D	D	D
Elko Micropolitan S.A.*	5,099	58.95%	20.02%
Nevada Total:	8,650	100.00%	

'D' stands for disclosure.

*Elko Micropolitan S.A. stands for Elko Micropolitan Statistical Area.

Source: Nevada Department of Employment, Training and Rehabilitation: Carson City, Nevada, 2007.

Table 5 shows the distribution of support activities for metal mining employment throughout Nevada's 17 counties during First Quarter 2007. Elko and Humboldt Counties account for approximately 85 percent of employment in the support activities for metal mining. Unfortunately, the employment in the Support Activities for Metal Mining Sector is not disclosed for Eureka County. Therefore, Elko Micropolitan S.A. employment in this sector only reflects employment in Elko County. Employment in this sector is primarily exploration which yields future hard rock mineral development in the state's mining sector.

Table 5. Nevada County Employment, County Proportional Share of Total Support Activities for Metal Mining Sector and Proportional Share of Total County Employment, First Quarter 2007.

County	Support Activities for Metal Mining Employment	% of Total State Support Activities for Metal Mining Employment	% Support Activities for Metal Mining Employment of Total County Employment
	(number)	(%)	(%)
Carson City	D	D	D
Churchill	0	0.00%	0.00%
Clark	D	D	D
Douglas	0	0.00%	0.00%
Elko	782	74.90%	3.79%
Esmeralda	D	D	D
Eureka	D	D	D
Humboldt	106	10.15%	1.45%
Lander	D	D	D
Lincoln	0	0.00%	0.00%
Lyon	17	1.63	0.13%
Mineral	D	D	D
Nye	25	2.39%	0.20%
Pershing	0	0.00%	0.00%
Storey	0	0.00%	0.00%
Washoe	43	4.12%	0.02%
White Pine	D	D	D
*Elko Micropolitan S.A.	782	74.90%	3.07%
Nevada Total:	1,044	100.00%	0.08%

'D' stands for disclosure.

*Elko Micropolitan S.A. stands for Elko Micropolitan Statistical Area.

Source: Nevada Department of Employment, Training and Rehabilitation: Carson City, Nevada, 2007.

Employment for the Support Activities for Other Mining Sector was 782 employees in First Quarter 2007, which was 3.07 percent of total Elko Micropolitan S.A. employment. This

may be somewhat under reported given employment for this sector in Eureka County was not disclosed.

Total state and local taxes paid by the mining industry increased from \$103 million in 2004 to over \$133 million in 2005 (Dobra 2006). Total taxes paid by the mineral industry from 2002 to 2005, were approximately \$435 million. In addition, mining contributed \$22 million to the tax base of counties in 2005.

Increases in taxes paid from 2004 to 2005, equivalent to about a 30% increase, was the single largest increase since the 1980's. These taxes are largely a result of use and sales tax payments. Compared to 2004 figures, in 2005 these taxes increased by almost 60%, from \$43.2 million to \$68.4 million. (Dobra, 2006) Although other taxes increased as well, their change was slight, while use and sales taxes most significantly contributed to this historic tax increase.

Gold prices have greatly increased in the past few years, as gold has approached \$700 an ounce. These high prices have led to prosperity and a resurgence of mine activity in Nevada's counties. However, the costs associated with mining are increasing. Specifically, high energy prices are severely impacting the mining industry, as are a lack of materials and a qualified work force.

Because the price of gold is high, more is being invested in exploration spending, more capital construction, the replacement of aging equipment, conduct differed maintenance, and so on. Whereby, profits decrease as a result of this new investment. An additional effect is that mine operators are willing to lower their cut-off grades. The effect of this is that efficiency decreases and profits decrease (Dobra, 2006).

The primary objective of this report is to estimate the impacts of the Mining Sector on the Elko County economy. Section II provides some basic concepts of county economics and multipliers. Section III provides an analysis of Elko County economic data. Section IV estimates the economic impacts of the Gold, Silver and Other Metal Ore Mining Sector on Elko County. Section V concludes.

Some Basic Concepts of County Economics and Income and Employment Multipliers

Figure 1 illustrates the major dollar flows of goods and services in any economy. The foundation of a county's economy is those businesses which sell some or all of their goods and

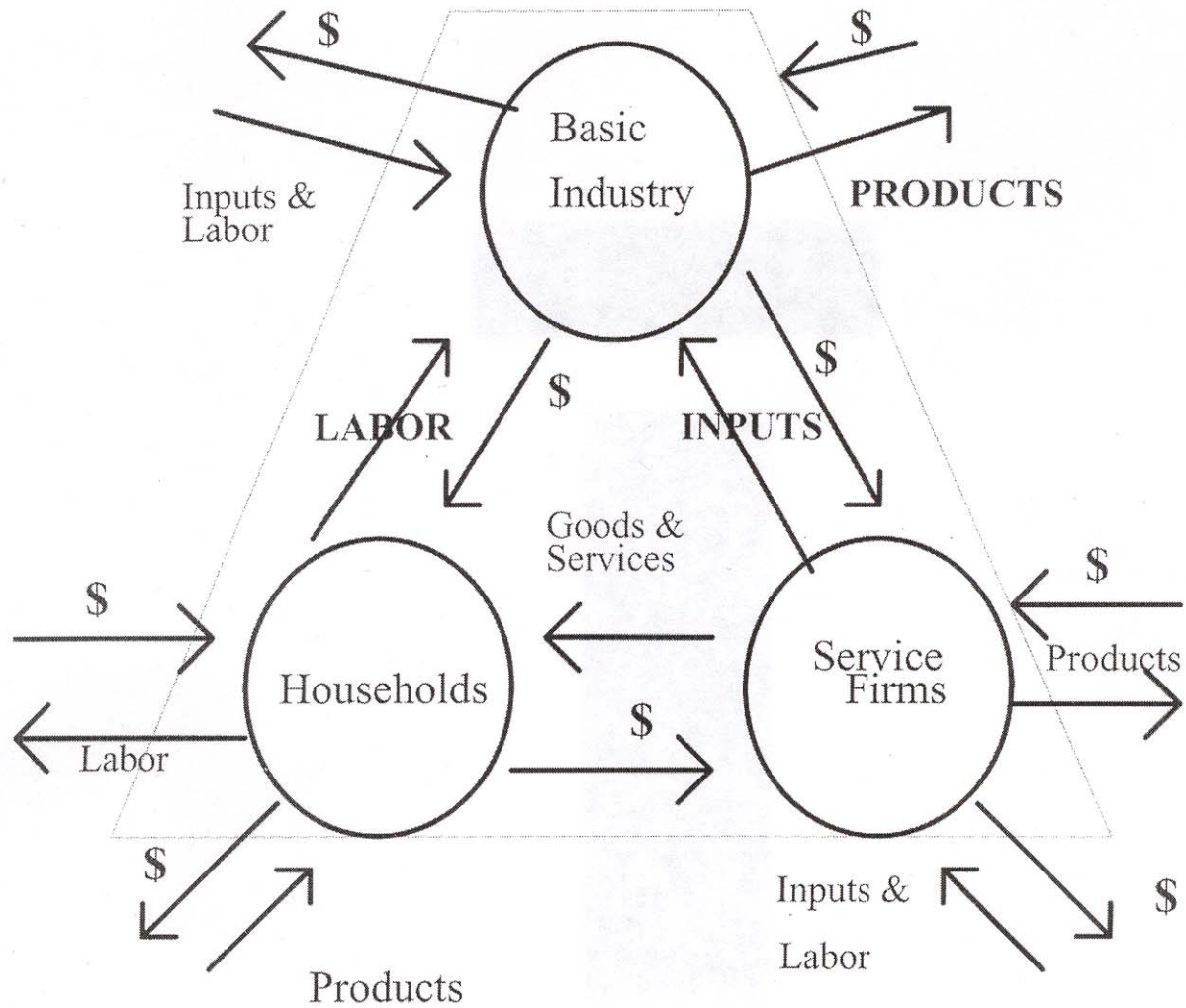
services to buyers outside of the county. Such a business is a basic industry. The flow of products out of, and dollars into, a county is represented by the two arrows in the upper right portion of Figure 1. To produce these goods and services for “export” outside the county, the basic industry purchases inputs from outside of the county (upper left portion of Figure 1), labor from the residents or “households” of the county (left side of Figure 1), and inputs from service industries located within the county (right side of Figure 1), and inputs from service industries located within the county (right side of Figure 1). The flow of labor, goods and services in the county is completed by households using their earnings to purchase goods and services from the county’s service industries (bottom of Figure 1). It is evident from the interrelationships illustrated in Figure 1 that a change in any one segment of a county’s economy will have reverberations throughout the entire economic system of the county.

Consider, for instance, the Gold, Silver and Other Metal Ore Mining Sector, and its impacts on the local economy. The Gold, Silver and Other Metal Ore Mining Sector’s activities can be considered a basic industry as it draws dollars from outside the area. These dollars may hire a few people from the household sector such as laborers to work in the mines. However, most of the local economic linkages are from the Gold, Silver and Other Metal Ore Mining Sector’s purchasing goods from the service sectors. These include businesses such as restaurants, gas stations, hotels and other retail businesses. As earnings increase in these businesses, they will hire additional people and buy more inputs from other businesses. Thus the change in the economic base works its way throughout the entire local economy.

The total impact of a change in the economy consists of direct, indirect and induced impacts. Direct impacts are the changes in the activities of the impacting industry, such as the reduction of operations by the Gold, Silver and Other Metal Ore Mining Sector. The impacting business, such as the Gold, Silver and Other Metal Ore Mining Sector, changes its purchases of inputs as a result of the direct impact. This produces an indirect impact in the business sectors. Both the direct and indirect impacts change the flow of dollars to the community’s households. The local households alter their consumption accordingly. The effect of this change in local household consumption upon businesses in a county is referred to as an induced impact.

A measure is needed that yields the effects created by an increase or decrease in economic activity. In economics, this measure is called the multiplier effect. These impacts or multiplier effects also occur with activities of the Support Activities for Other Mining Sector.

Figure 1: Overview of Community Economic System



Analysis of Elko Micropolitan Statistical Area

Economic Data

Using the IMPLAN input-output model database (Minnesota IMPLAN Group, Inc., 2006), the top twenty sectors in value of output, employment, and labor income are shown in tables 5 through 7. Tables 8 and 9 show the top twenty sectoral values of exports and imports; these provide an indication of sectoral contribution to the Elko Micropolitan Statistical Area (Elko Micropolitan S.A.) economic base, which is comprised of Elko County and Eureka County. The latest data compiled by IMPLAN for this report is for the year 2004.

Sectoral location quotient values show which sectors are importers, self-sufficient, and exporters. Table 10 shows these sector location quotient values.

Sectoral Value of Output, Employment, and Labor Income

In 2004, there were 146 economic sectors in the Elko Micropolitan S.A. Table 5 shows the top twenty economic sectors by value of output for the Elko Micropolitan S.A. These twenty sectors made up approximately \$3.0 billion in output, or 82 percent of total the Elko Micropolitan S.A. output in 2004. The Gold, Silver and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. recorded a value of output of \$1.58 billion which was 43.77 percent of total Elko Micropolitan S.A. value of output. This output level ranks the Gold, Silver and Other Metal Ore Mining Sector as the largest of the Elko Micropolitan S.A.'s 146 economic sectors in sectoral value of production.

The value of production for the Support Activities for Other Mining Sector in 2004 was \$92.9 million which was 2.57 percent of total Elko Micropolitan S.A. value of output. This ranked the Support for Other Mining Sector seventh among the Elko Micropolitan S.A.'s economic sectors in value of output. In total the Gold, Silver and Other Metal Ore Mining Sector and the Support Activities for Other Mining Sector, or what will be denoted as the Hard Rock Mining Sector, make up approximately 46 percent of total Elko Micropolitan S.A. economy output.

Table 6 shows the top twenty Elko Micropolitan S.A. economic sectors by levels of employment for 2004. These top twenty employment sectors made up approximately 74 percent of total Elko Micropolitan S.A. employment in 2004. The Gold, Silver and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. in 2004 had 3,958 employees which were 16.17 percent of total Elko Micropolitan S.A. employment. This employment level ranks the Gold,

Silver and Other Metal Ore Mining Sector first among the Elko Micropolitan S.A.'s 146 economic sectors as to level of sectoral employment.

The employment level for the Support Activities for Other Mining Sector in 2004 was 335 employees which was 1.37 percent of total Elko Micropolitan S.A. value of output. This ranked the Support for Other Mining Sector sixteenth among the Elko Micropolitan S.A.'s economic sectors in employment. In total the Hard Rock Mining Sector, made up approximately 17.5 percent of total Elko Micropolitan S.A. employment.

Table 5. Top Twenty Economic Sectors by Values of Output for the Elko Micropolitan S.A., 2004

Sector	Output	Percentage Total Output
Gold, silver and other metal ore mining	\$1,579,415,000	43.77%
Hotels and motels, including casino hotels	\$261,469,000	7.25%
State & Local Education	\$129,264,000	3.58%
Owner-occupied dwellings	\$125,214,000	3.47%
Wholesale trade	\$105,590,000	2.93%
New residential 1-unit structures-all	\$103,855,000	2.88%
Support activities for other mining	\$92,863,000	2.57%
Cattle ranching and farming	\$76,564,000	2.12%
Power generation and supply	\$74,750,000	2.07%
All other crop farming	\$57,992,000	1.61%
Food services and drinking places	\$50,803,000	1.41%
Commercial and institutional buildings	\$42,534,000	1.18%
Offices of physicians, dentists and other health practitioners	\$41,264,000	1.14%
Monetary authorities and depository credit institutions	\$40,488,000	1.12%
Federal Non-Military	\$40,465,000	1.12%
State & Local Non-Education	\$37,093,000	1.03%
Telecommunications	\$31,279,000	0.87%
Food and beverage stores	\$28,185,000	0.78%
Motor vehicle and parts dealers	\$27,811,000	0.77%
Machinery and equipment rental and leasing	\$27,354,000	0.76%
Subtotal for top 20 sectors	\$2,974,252,000	82.43%

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Table 6. Top Twenty Economic Sectors by Employment for the Elko Micropolitan S.A., 2004.

Sector	Employment	Percentage Total Employment
Gold, silver and other metal ore mining	3,958	16.17%
Hotels and motels, including casino hotels	3,271	13.36%
State & Local Education	2,941	12.02%
Food services and drinking places	1,239	5.06%
New residential 1-unit structures- all	697	2.85%
Wholesale trade	675	2.76%
Cattle ranching and farming	565	2.31%
State & Local Non-Education	480	1.96%
Food and beverage stores	463	1.89%
Employment services	454	1.85%
Private households	445	1.82%
Couriers and messengers	413	1.69%
Offices of physicians, dentists and other health practitioners	406	1.66%
Commercial and institutional buildings	388	1.59%
General merchandise stores	342	1.40%
Support activities for other mining	335	1.37%
Federal Non-Military	327	1.34%
Motor vehicle and parts dealers	298	1.22%
Nonstore retailers	291	1.19%
Hospitals	263	1.07%
Subtotal for top 20 Sectors	18,251	74.56%

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004".
Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Table 7 shows the top twenty economic sectors in the Elko Micropolitan S.A. by levels of labor income. Sectoral labor incomes are the sum of sectoral employee compensation and proprietor income. From table 7, the top twenty of 146 economic sectors in the Elko Micropolitan S.A. accounted for approximately 81 percent of total Elko Micropolitan S.A. labor income. The Gold, Silver and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. in 2004 had labor income of \$346.2 million which was 30.8 percent of total Elko Micropolitan S.A. labor income. This sector's labor income level ranks the Gold, Silver and Other Metal Ore Mining Sector as first among the Elko Micropolitan S.A.'s 146 economic sectors as to labor income.

The level of labor income for the Support Activities for Other Mining Sector in 2004 was \$34.4 million which was 3.06 percent of total Elko Micropolitan S.A. labor income. This ranked the Support for Other Mining Sector seventh among the Elko Micropolitan S.A.'s economic

sectors in level of labor income. In total the Hard Rock Mining Sector, make up approximately 33.9 percent of total Elko Micropolitan S.A. labor income.

Table 7. Top Twenty Economic Sectors by Labor Income for the Elko Micropolitan S.A., 2004.

Sector	Employee Compensation	Proprietor Income	Labor Income	Percentage Total Labor Income
Gold, silver and other metal ore mining	\$340,490,000	\$5,754,000	\$346,244,000	30.80%
State & Local Education	\$117,309,000	\$0	\$117,309,000	10.43%
Hotels and motels, including casino hotels	\$93,129,000	\$944,000	\$94,073,000	8.37%
New residential 1-unit structures- all	\$37,875,000	\$2,813,000	\$40,688,000	3.62%
Wholesale trade	\$37,446,000	\$2,234,000	\$39,680,000	3.53%
Federal Non-Military	\$36,313,000	\$0	\$36,313,000	3.23%
Support activities for other mining	\$34,284,000	\$141,000	\$34,425,000	3.06%
State & Local Non-Education	\$32,134,000	\$0	\$32,134,000	2.86%
Offices of physicians, dentists and other health practitioners	\$20,779,000	\$4,443,000	\$25,222,000	2.24%
Commercial and institutional buildings	\$20,983,000	\$1,552,000	\$22,535,000	2.00%
Food services and drinking places	\$14,829,000	\$421,000	\$15,250,000	1.36%
Power generation and supply	\$14,390,000	\$541,000	\$14,931,000	1.33%
Employment services	\$13,051,000	\$214,000	\$13,265,000	1.18%
Motor vehicle and parts dealers	\$11,819,000	\$503,000	\$12,322,000	1.10%
Food and beverage stores	\$11,813,000	\$472,000	\$12,285,000	1.09%
Hospitals	\$11,640,000	\$0	\$11,640,000	1.04%
Insurance agencies, brokerages and related	\$10,963,000	\$307,000	\$11,270,000	1.00%
All other crop farming	\$4,534,000	\$6,085,000	\$10,619,000	0.94%
Monetary authorities and depository credit in	\$8,870,000	\$900,000	\$9,770,000	0.87%
Automotive repair and maintenance, except car washes	\$8,362,000	\$445,000	\$8,807,000	0.78%
Subtotal for top 20 sectors	\$881,013,000	\$27,769,000	\$908,782,000	80.83%

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004".
Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

As tables 5 through 7 show, the Hard Rock Mining Sector plays an important role in the entire Elko Micropolitan S.A. economy. The next step is to estimate sectoral importance to the Elko Micropolitan S.A.'s economic base. Sectoral value of exports and imports, and location quotient values will be used to estimate individual sectoral contributions to Elko Micropolitan S.A. economic base.

Sectoral Value of Exports and Imports

As shown in figure 1, export sales bring dollars into a county economy which provides growth for future economic expansions. Imports however are seen as leakages from county economies and as such reduce future economic growth. Economic development activities which expand exports are called export enhancement while reduction of imports are referred to as import substitution activities.

Table 8 shows the top twenty economic sectors in the Elko Micropolitan S.A. by value of exports. From table 8, these top twenty of 146 economic sectors in the Elko Micropolitan S.A. account for approximately 95 percent of total Elko Micropolitan S.A. export value. Of interest, the top five exporting economic sectors are the Gold, Silver, and Other Metal Ore Mining Sector, the Hotels and Motels including Casino Hotels Sector, the Cattle Ranching and Farming Sector, the All Other Crop Farming Sector and the Support Activities for Other Mining Sector. The Gold, Silver, and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. in 2004 had exports of \$1.44 billion which were 67.39 percent of total Elko Micropolitan S.A. value of exports. The Support Activities for Other Mining Sector in the Elko Micropolitan S.A. in 2004 had exports of 36.8 million which were 1.73 percent of total Elko Micropolitan S.A. value of Exports. In total, the Hard Rock Mining Sector in the Elko Micropolitan S.A. in 2004 had exports of \$1.48 billion which were 69.11 percent of total Elko Micropolitan S.A. value of exports.

For county economic development efforts, it may be advantageous to support county economic sectors that are the county's exporters. This type of economic development is called export enhancement.

Table 8. Top Twenty Economic Sectors by Value of Export for the Elko Micropolitan S.A., 2004.

Sector	Total Exports	Percent of Total
Gold, silver and other metal ore mining	\$1,438,310,000	67.39%
Hotels and motels including casino hotels	\$247,823,000	11.61%
Cattle ranching and farming	\$61,059,000	2.86%
All other crop farming	\$44,089,000	2.07%
Support activities for other mining	\$36,835,000	1.73%
Wholesale trade	\$35,995,000	1.69%
Insurance agencies, brokerages and related	\$23,695,000	1.11%
Machinery and equipment rental and leasing	\$20,986,000	0.98%
Air transportation	\$16,706,000	0.78%
Rail transportation	\$14,896,000	0.70%
Gasoline stations	\$13,891,000	0.65%
Sand, gravel, clay and refractory mining	\$10,352,000	0.49%
Commercial and institutional buildings	\$9,242,000	0.43%
Employment services	\$9,145,000	0.43%
Other animal food manufacturing	\$8,962,000	0.42%
Nonstore retailers	\$8,693,000	0.41%
Commercial machinery repair and maintenance	\$8,466,000	0.40%
Other amusement, gambling and recreation industries	\$8,452,000	0.40%
Monetary authorities and depository credit intermediaries	\$8,236,000	0.39%
Couriers and messengers	\$7,737,000	0.36%
Subtotal of top 20 Sectors	\$2,033,570,000	95.28%

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004".
 Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Most Elko Micropolitan S.A. industries require inputs from outside the region. Table 9 shows the top twenty economic sectors in the Elko Micropolitan S.A. by value of industry imports. From table 9, these top twenty economic sectors in the Elko Micropolitan S.A. account for approximately 81.4 percent of total Elko Micropolitan S.A. value of industry imports. The top five importing economic sectors are the Gold, Silver, and Other Metal Ore Mining Sector, the Hotels and Motels including Casino Hotels Sector, the New Residential 1- unit Structures-all Sector, the Cattle Ranching and Farming Sector and the Support Activities for Other Mining Sector. The Gold, Silver and Other Metal Ore Mining Sector was the largest importer and had \$460.4 million in imports which was 47.39 percent of total industry imports to the Elko Micropolitan S.A. in 2004. The Support Activities for Other Mining Sector was the fifth largest importer and had \$25.9 million in imports which was 2.66 percent of total industry imports in the

Elko Micropolitan S.A. in 2004. In total, the Hard Rock Mining Sector had \$486.3 million in imports which was 50.05 percent of total industry imports in the Elko Micropolitan S.A. in 2004.

Another economic development strategy attempts to reduce levels of imports. Import substitution attempts to strengthen economic linkages in a county economy and therefore enhance the sector's multiplier effect. By identifying input-output sector commodities that are imported the county can target these sectors for import substitution efforts.

Comparing sectoral exports and imports provides information as to basic sectors in a county economy. In 2004, total value of exports in the Elko Micropolitan S.A. was \$915 million while value of industry imports to the Elko Micropolitan S.A. was \$530 million. Households and the government sector imported an additional \$599 million worth of goods and services from outside of the Elko Micropolitan S.A. Total value of imports into the Elko Micropolitan S.A. was \$1,128 million. These figures show that in 2004 the value of imports for the Elko Micropolitan S.A. were \$213 million more than value of exports. This produces a balance of trade imbalance for the Elko Micropolitan S.A.

However, value of exports for the Hard Rock Mining Sector was \$952.0 million greater than sectoral value of imports. The Hard Rock Mining Sector is the largest exporter in the Elko Micropolitan S.A. and has a positive balance of trade, providing an economic base for future economic growth in the Elko Micropolitan S.A. The Hard Rock Mining Sector by its export sales contribute substantially to the Elko Micropolitan S.A.'s balance of payments. This shows the importance of the Hard Rock Mining Sector that may be lost if only sectoral value of output, employment, and labor income are analyzed.

Table 9. Top Twenty Economic Sectors by Value of Imports for the Elko Micropolitan S.A., 2004.

Sector	Total Imports	Percent of Total
Gold, silver and other metal ore mining	\$460,417,389	47.39%
Hotels and motels, including casino hotels	\$57,467,094	5.91%
New residential 1-unit structures-all	\$38,039,948	3.92%
Cattle ranching and farming	\$27,501,556	2.83%
Support activities for other mining	\$25,888,144	2.66%
Food services and drinking places	\$22,074,316	2.27%
Wholesale trade	\$21,558,069	2.22%
Power generation and supply	\$19,342,432	1.99%
All other crop farming	\$16,905,090	1.74%
Owner-occupied dwellings	\$14,740,270	1.52%
Air transportation	\$11,927,616	1.23%
Commercial and institutional buildings	\$11,253,960	1.16%
Hospitals	\$9,443,490	0.97%
Telecommunications	\$9,200,006	0.95%
Machinery and equipment rental and leasing	\$8,459,681	0.87%
Truck transportation	\$7,676,682	0.79%
Offices of physicians, dentists and other health practitioners	\$7,529,537	0.77%
Natural gas distribution	\$7,425,824	0.76%
Other State and local government enterprises	\$7,181,289	0.74%
Other animal food manufacturing	\$7,043,586	0.72%
Subtotal of top 20 Sectors	\$791,075,979	81.42%

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004".
 Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Pie Charts for 14 Sector Aggregation of the Elko Micropolitan Statistical Area Economy

For a slightly different look at the same IMPLAN data, the 145 active IMPLAN sectors in the Elko Micropolitan S.A. were aggregated into 14 super-sectors:

- | | |
|--|--|
| 1. Ag & Natural Resources | 8. Information |
| 2. Gold, Silver and Other Metal Ore Mining | 9. Financial Services |
| 3. Other Mining | 10. Professional and Business Services |
| 4. Construction | 11. Health and Private Education |
| 5. Manufacturing | 12. Hospitality and Entertainment |
| 6. Transportation and Utilities | 13. Other Services |
| 7. Trade | 14. Government and Miscellaneous |

In Figures 2 to 6, the 14 super-sectors are used in pie charts to show the share each super-sector represents of total value of output, employment, labor income, and values of exports and imports, respectively. The aggregation of 145 sectors into 14 super-sectors gives a good overview of the total economy but does not contain as much detail as the disaggregated data discussed in the previous section.¹

Sectoral Value of Output, Employment, and Labor Income

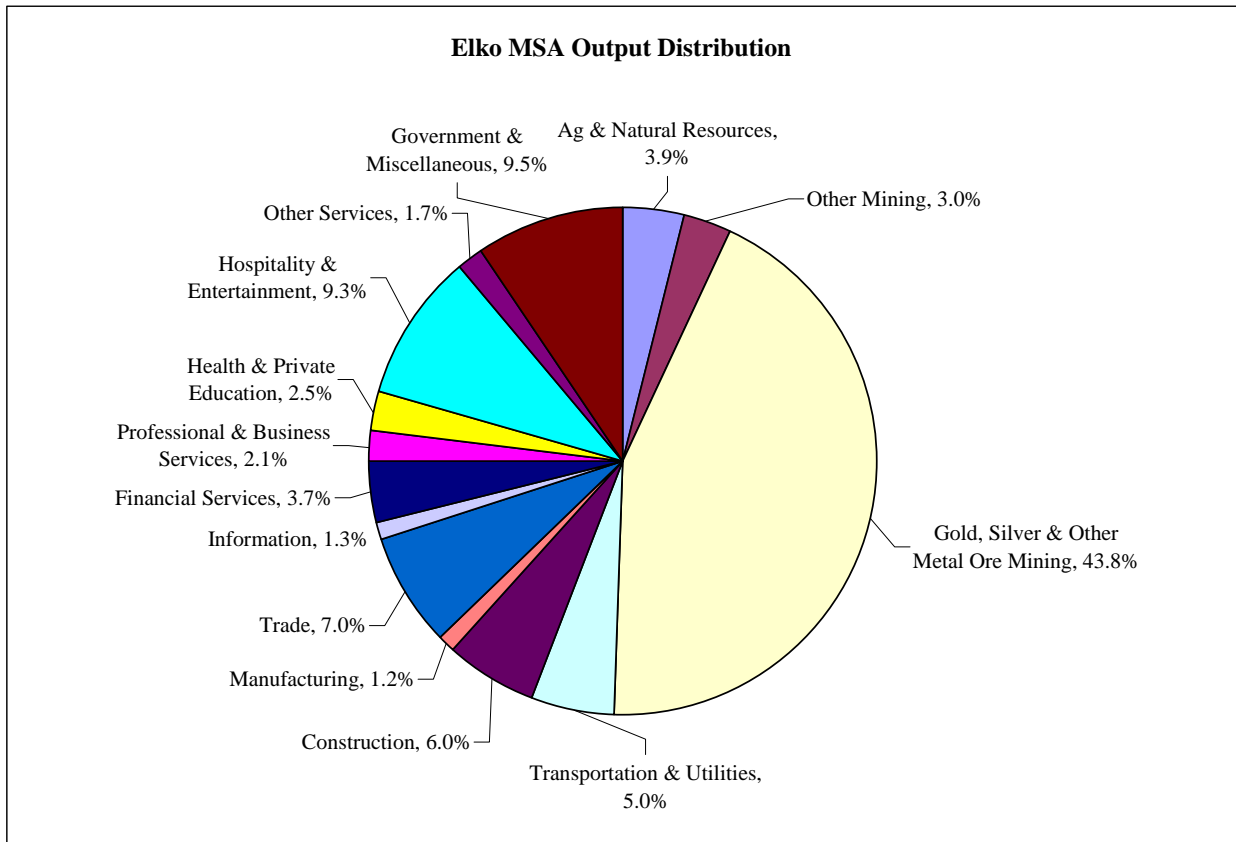
In Figure 2, the distribution of value of output for the Elko Micropolitan S.A. is displayed for 14 super-sectors. The Gold, Silver, and Other Metal Ore Mining Sector is the largest super-sector by share of value of output at 43.8%, followed by the Government and Miscellaneous Super-Sector at 9.5 percent and the Hospitality and Entertainment Super-Sector at 9.3 percent.

Figure 3 shows the share of the Elko Micropolitan S.A. total employment for each super-sector. By share of employment the largest super-sector is Hospitality and Entertainment with 19.7 percent of total employment. The next largest super-sectors by share of employment are Government and Miscellaneous and Gold, Silver and Other Metal Ore Mining with 16.2 percent of total employment each.

Figure 4 shows share of total labor income for the 14 aggregated super-sectors. By labor income, the largest super-sector in the Elko Micropolitan S.A. economy is Gold, Silver and Other Metal Ore Mining Sector with 30.8 percent of the total. The second and third largest super-sectors are Government and Miscellaneous Sector (17.5%) and Hospitality and Entertainment Sector (10.4%).

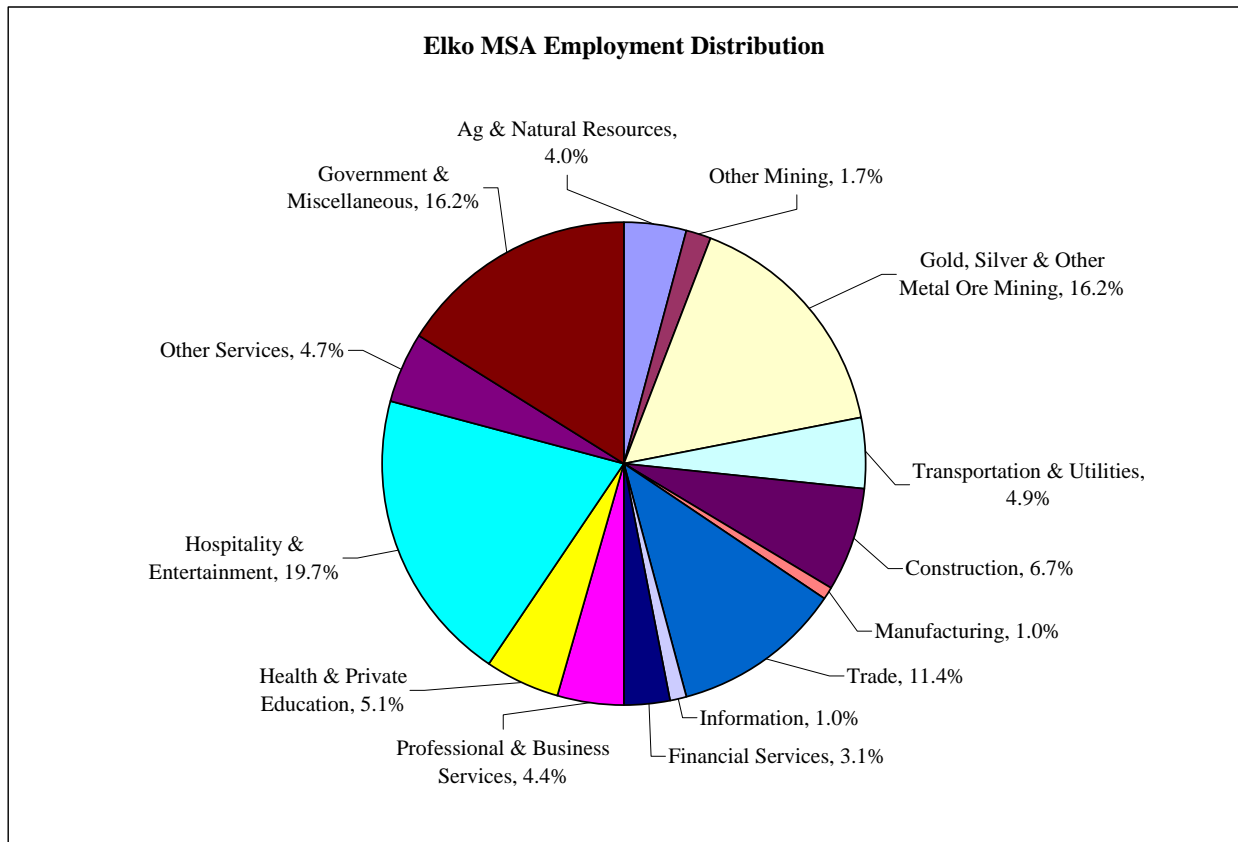
¹ Because of the aggregation of the entire economy into 14 super-sectors, results will be different than the disaggregated 145 sector results.

Figure 2. Distribution of the Elko Micropolitan S.A. Value of Output for 14 Super-Sectors



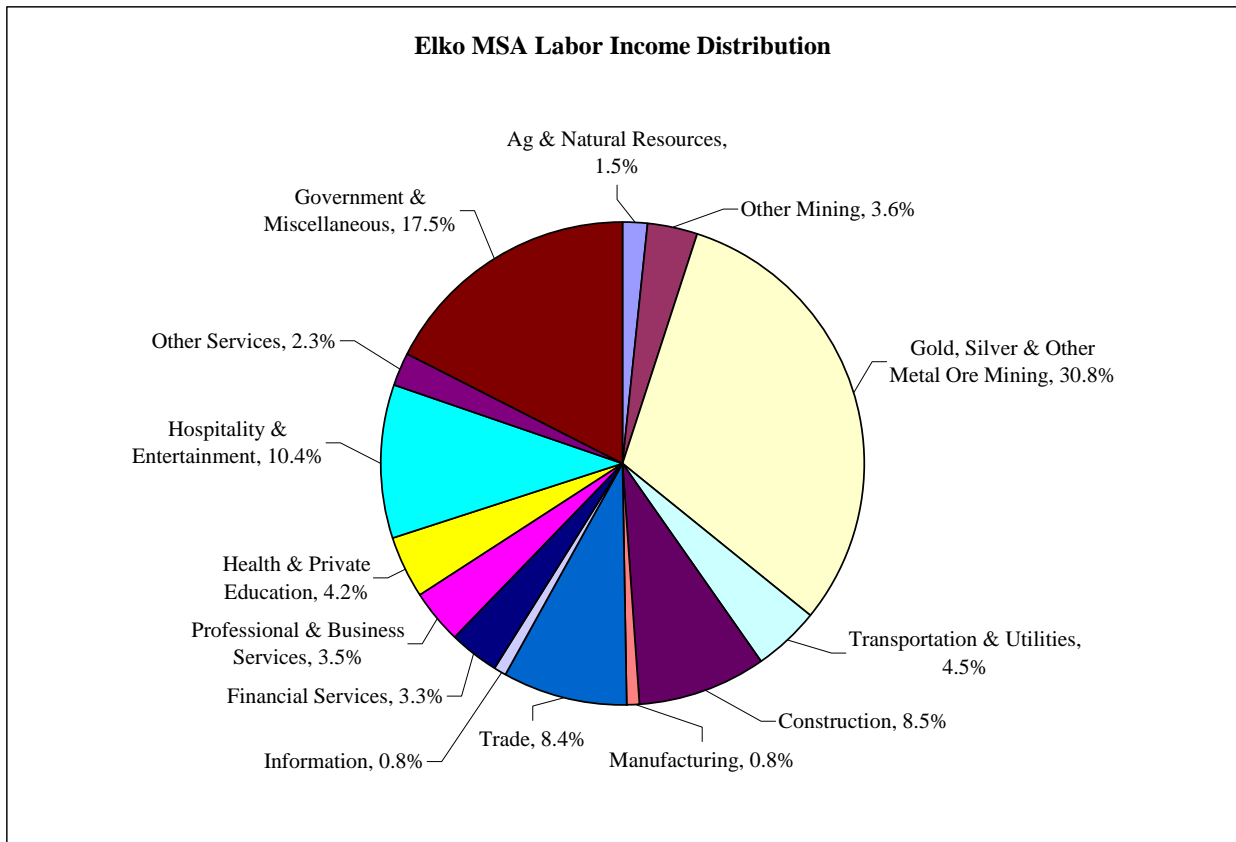
Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004".
Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Figure 3. Distribution of the Elko Micropolitan S.A. Employment for 14 Super-Sectors



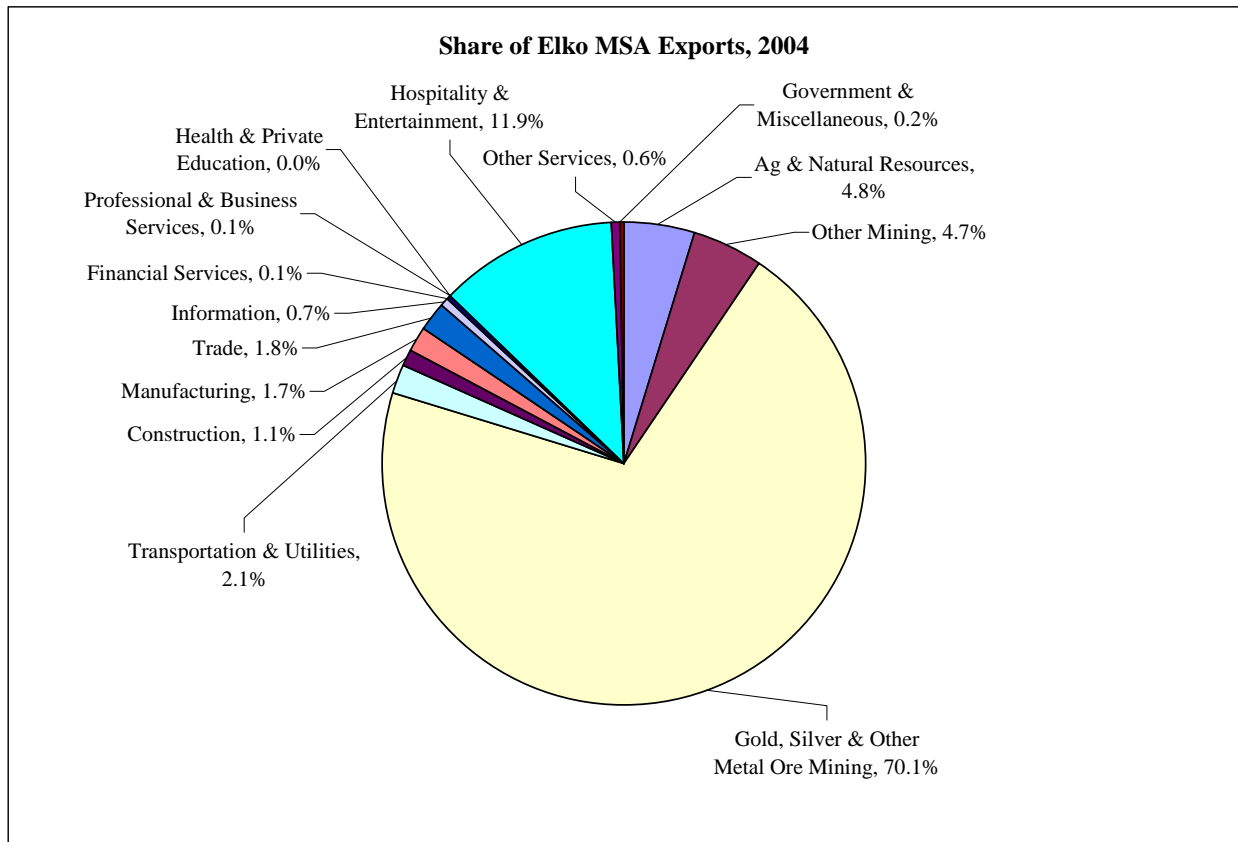
Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Figure 4. Distribution of the Elko Micropolitan S.A. Labor Income for 14 Super-Sectors



Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Figure 5. Distribution of the Elko Micropolitan S.A. Value of Exports for 14 Super-Sectors



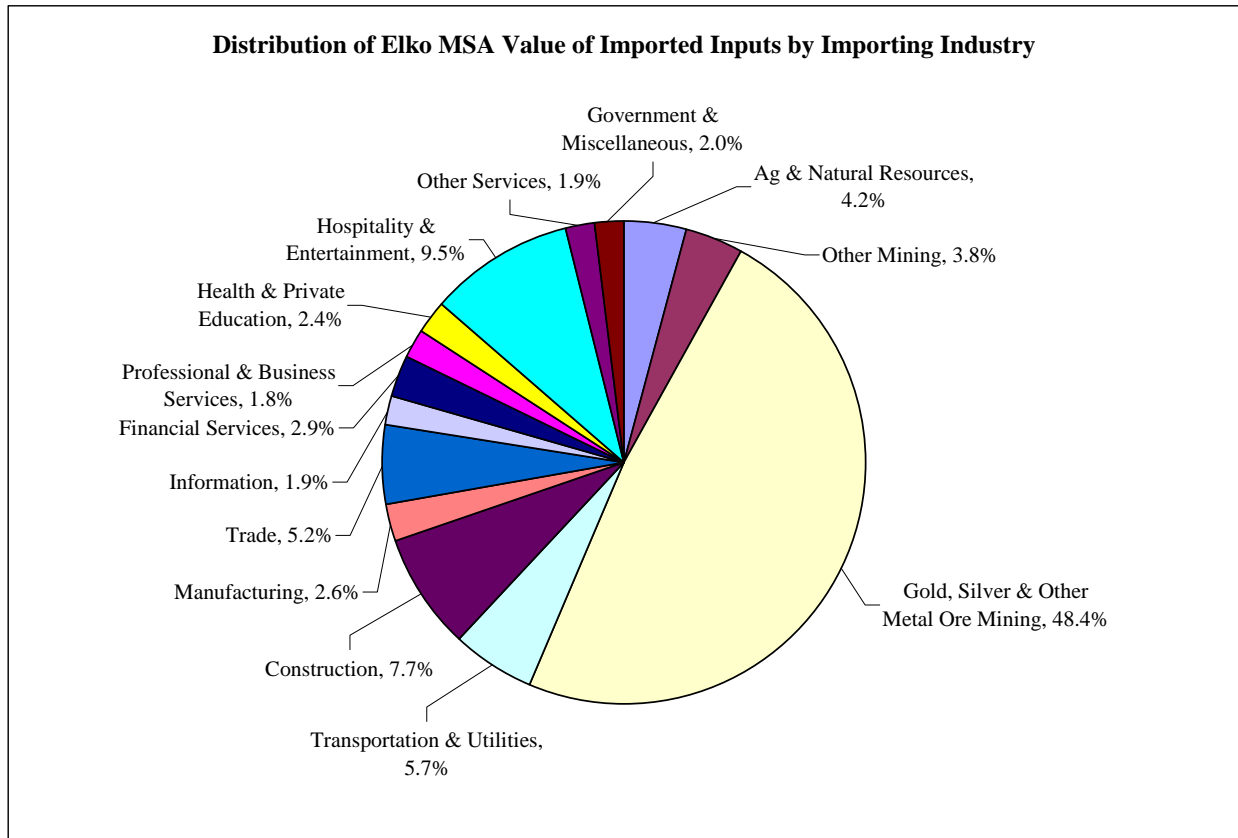
Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004"
 Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Sectoral Value of Exports and Imports

Figure 5 shows the share of value of exports for each of the 14 super-sectors. By share of value of exports, the largest super-sector is Gold, Silver and Other Metal Ore Mining (70.1%). The second largest producer of export value in the Elko Micropolitan S.A. is the Hospitality and Entertainment Super-Sector (11.9%). Ag and Natural Resources (4.8%), Other Mining (4.7%), and Transportation and Utilities Sectors (2.1%) are the 3rd, 4th and 5th largest sectors by share of export value.

Figure 6 shows shares of total value of imported industry inputs for 14 super-sectors. Hospitality and Entertainment Sector and Gold, Silver and Other Metal Ore Mining Sector are the top 2 importers of industry inputs when using the 14 sector aggregation scheme. The Construction Super-Sector is the third largest importer of inputs.

Figure 6. Distribution of the Elko Micropolitan S.A. Imported Industry Imports for 14 Super-Sectors



Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Location Quotient Analysis

The economic base of a county refers to the relative size of its economic sectors. A county is said to have a diversified economic base if several economic sectors are relatively large. Conversely, if one or a few economic sectors dominate a local economy, the economy is said to have a concentrated economic base. One analytical regional economics technique to measure economic base is location quotients.

The degree of concentration of the Elko Micropolitan S.A. economic sectors are determined by calculating location quotients for individual economic sectors. Location quotients indicate the economic importance of each county economic sector relative to the same economic sector at the national level. Location quotients usually use employment as an indicator of an industry's size and importance. The primary focus of location quotients is to identify the economic sectors that are either more important or less important statewide or locally than

nationally. The broader the economic base, that is, the higher the location quotients, the more stable the economy of a county. On the other hand, very low location quotients represent economic sectors that are largely underdeveloped and may offer an opportunity for future development.

An economic sector's location quotient is the ratio of the sector's share of employment in the county to the sector's share of employment in the nation. It is calculated as follows:

$$LQ_i = \frac{e_i/E}{n_i/N}$$

Where:

i = Economic Sector

LQ_i = Location quotient for economic sector i

e_i = County employment in economic sector i

E = Total county employment

n_i = National employment in economic sector i

N = Total national employment

The interpretation of location quotients are as follows:

1. Every sector's output can be divided into two uses: export and local consumption (use).
2. The amount consumed (used) by a community is proportionate to the amount consumed locally.
3. If the location quotient for an economic sector is less than one, goods and services must be imported to satisfy local demands.
4. If the location quotient for an economic sector is equal to one, then the economy is approximately fulfilling the requirements of the local household and firms.
5. Finally, if the location quotient is greater than 1.25 for a particular sector, the county is an exporting sector. A self-sufficient economic sector is designated by a location quotient value between 0.75 and 1.25 for a selected county. Finally an importing economic sector is designated by a location quotient less than 0.75 for a selected state or county.

Table 10 lists the top twenty economics sectors in the Elko Micropolitan S.A. by their location quotient values. The Gold, Silver, and Other Metal Ore Mining Sector and the Support Activities for Other Mining Sector ranked first and second among the Elko Micropolitan S.A.'s 146 sectors. The location quotient value of 1,882.61 for the Gold, Silver, and Other Metal Ore Mining Sector and 258.06 for the Support Activities for Other Mining Sector indicates that the Hard Rock Mining Sector is a major economic base sector for the Elko Micropolitan S.A. and brings dollars into the area for future economic growth and development.

Table 10. Top Twenty Economic Sectors by Location Quotient Value for the Elko Micropolitan S.A., 2004.

Industry Sector	Location Quotient
Gold, silver and other metal ore mining	1,882.61
Support activities for other mining	258.06
Hotels and motels, including casino hotels	19.01
All other crop farming	12.95
Sand, gravel, clay and refractory mining	6.39
Cattle ranching and farming	5.36
Other nonmetallic mineral mining	3.97
Machinery and equipment rental and leasing	3.62
Couriers and messengers	3.61
Power generation and supply	2.97
Rail transportation	2.85
Other animal food manufacturing	2.54
Power-driven handtool manufacturing	2.13
Gasoline stations	1.96
Federal Non-Military	1.79
Other accommodations	1.77
State & Local Education	1.74
New residential 1-unit structures- all	1.62
Air transportation	1.56
Private households	1.47

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for the United States, Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006.

Inter-Industry Analyses

Within a county economy, there are numerous economic sectors performing different tasks. All sectors are dependent upon each other to some degree. A change in economic activity by one sector will impact either directly or indirectly the activity and viability of other sectors in the economy. In order to show these interdependencies and interventions between economic sectors, a county-wide input-output model can be used.

Input-output models derive the linkages and multipliers for economic sectors in an economy. For this analysis, the microcomputer input-output model, IMPLAN (Minnesota IMPLAN Group, Inc., 2006), was used to derive economic linkages for the Elko Micropolitan S.A. The economic, employment, and labor income impacts of the Gold, Silver and Other Metal Ore Mining Sector on the Elko Micropolitan S.A. economy was estimated. Table 11 shows the impacts of the activities by the Gold, Silver and Other Metal Ore Mining Sector on the Elko Micropolitan S.A. economy. Table 12 shows the impacts of the activities by the Support Activities for Other Mining Sector on the Elko Micropolitan S.A. economy. Finally, table 13 shows the total impacts of the two sectors combined, which is denoted as the Hard Rock Mining Sector.

From Table 11, the Gold, Silver and Other Metal Ore Mining Sector for the Elko Micropolitan S.A. in First Quarter 2007 had a production level of \$2.03 billion, hired 5,099 employees, and paid labor income of \$452.8 million. Given the multiplier impacts, the Gold, Silver and Other Metal Ore Mining Sector in the Elko Micropolitan S.A. had total economic impacts of \$2.63 billion in First Quarter 2007. This means that beyond the direct economic benefits of \$2.03 billion, the indirect and induced impacts of the Gold, Silver and Other Metal Ore Mining Sector on the Elko Micropolitan S.A. economy was \$607.8 million. Indirect impacts are the additional expenditures between economic sectors after the initial direct expenditure is made. Induced impacts are the additional expenditures and economic activity attributable to household sector interactions.

Table 11. Economic, Employment, and Labor Income Impacts of the Gold, Silver and Other Metal Ore Mining Sector on the Elko Micropolitan S.A. Economy, First Quarter 2007.

Category of Impacts	Direct Effects	Indirect and Induced Effects	Total Effects
Economic	\$2,026,012,242	\$607,803,673	\$2,633,815,915
Employment	5,099	4,334	9,433
Labor Income	\$452,827,108	\$172,074,301	\$624,901,410

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006; Nevada Department of Employment, Training and Rehabilitation: Carson City, Nevada, 2007

Also from table 11, the Gold, Silver and Other Metal Ore Mining Sector had total employment and labor income impacts of 9,433 jobs and \$624.9 million, respectively. This means that due to the economic linkages of the Gold, Silver and Other Metal Ore Mining Sector, an additional 4,334 jobs and \$127.1 million in labor income were created in the Elko Micropolitan S.A. from indirect and induced linkages.

Table 12. Economic, Employment, and Labor Income Impacts of the Support Activities for Other Mining Sector on the Elko Micropolitan S.A. Economy, First Quarter 2007.

Category of Impacts	Direct Effects	Indirect and Induced Effects	Total Effects
Economic	\$221,249,952	\$70,799,985	\$292,049,937
Employment	782	751	1,533
Labor Income	\$82,505,003	\$24,751,501	\$107,256,504

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006; Nevada Department of Employment, Training and Rehabilitation: Carson City, Nevada, 2007

From Table 12, the Support Activities for Other Mining Sector for the Elko Micropolitan S.A. in First Quarter 2007 had an estimated production level of \$221.1 million, hired 782 employees, and paid labor income of \$82.5 million. Given the multiplier impacts, the Support Activities for Other Mining Sector in the Elko Micropolitan S.A. had total economic impacts of \$292.0 million in First Quarter 2007. This means that beyond the direct economic benefits of \$221.1 million, the indirect and induced impacts of the Support Activities for Other Mining Sector on the Elko Micropolitan S.A. economy was \$70.8 million. Indirect impacts are the additional expenditures between economic sectors after the initial direct expenditure is made. Induced impacts are the additional expenditures and economic activity attributable to household sector interactions.

Also from table 12, the Support Activities for Other Mining Sector had total employment and labor income impacts of 1,533 jobs and \$107.2 million, respectively. This means that due to the economic linkages of the Support Activities for Other Mining Sector an additional 751 jobs and \$24.8 million in labor income were created in the Elko Micropolitan S.A. from indirect and induced linkages.

Table 13 denotes the economic impacts of the Hard Rock Mining Sector, which is comprised of the Gold, Silver and Other Metal Ore Mining Sector as well as the Support Activities for Other Mining Sector. From Table 13, the Hard Rock Mining Sector for the Elko Micropolitan S.A. in First Quarter 2007 had an estimated production level of \$2.25 billion, hired 5,881 employees, and paid labor income of \$535.3 million. Given the multiplier impacts, the Hard Rock Mining Sector in the Elko Micropolitan S.A. had total economic impacts of \$2.92 billion in First Quarter 2007. This means that beyond the direct economic benefits of \$2.25 billion, the indirect and induced impacts of the Hard Rock Mining Sector on the Elko Micropolitan S.A. economy was \$678.6 million. Indirect impacts are the additional expenditures between economic sectors after the initial direct expenditure is made. Induced impacts are the additional expenditures and economic activity attributable to household sector interactions.

Table 13. Economic, Employment, and Labor Income Impacts of the Hard Rock Mining Sector on the Elko Micropolitan S.A. Economy, First Quarter 2007.

Category of Impacts	Direct Effects	Indirect and Induced Effects	Total Effects
Economic	\$2,247,262,194	\$678,603,657	\$2,925,865,852
Employment	5,881	5,085	10,966
Labor Income	\$535,332,112	\$196,825,802	\$732,157,914

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006; Nevada Department of Employment, Training and Rehabilitation: Carson City, Nevada, 2007

Also from table 13, the Hard Rock Mining Sector had total employment and labor income impacts of 10,966 jobs and \$732.2 million, respectively. This means that due to the economic linkages of the Hard Rock Mining Sector an additional 5,085 jobs and \$196.8 million in labor income were created in the Elko Micropolitan S.A. from indirect and induced linkages.

Occupational Impacts

Table 14 depicts the occupational impacts of the Hard Rock Mining Sector. From table 14, the 5,881 jobs directly created by the Hard Rock Mining Sector are distributed amongst 22 different occupation categories. For direct employment, the top three occupation categories for the Hard Rock Mining Sector are Construction and Extraction Occupations; Installation,

Maintenance and Repair Occupations; and Production Occupations. Table 14 also depicts the occupation categories filled by the 5,085 jobs indirectly created by the Hard Rock Mining Sector. The top three occupation categories for these jobs are Construction and Extraction Occupations; Installation, Maintenance and Repair Occupations; and Production Occupations. Also indirect occupations such as Building and Grounds Cleaning and Maintenance Occupations; Office and Administrative Support Occupations; and Architects and Engineering Occupations realized employment impacts of 14; 251; and 245 jobs, respectively, from Hard Rock Mining Sector operations. Given the economic linkages of the Hard Rock Mining Sector, any changes in production levels of the Hard Rock Mining Sector would greatly impact the Elko Micropolitan S.A. economy. Also occupations lost by lower production levels by the Hard Rock Mining Sector would not be offset by hirings in other sectors of the Elko Micropolitan S.A. Additionally, wages for these occupations would not be at commiserate value as when the Hard Rock Mining Sector was at full production level.

Table 14. Occupational Impacts of the Hard Rock Mining Sector on the Elko Micropolitan S.A. Economy, First Quarter 2007.

Level 1 Occupations	Direct Impact of Hard Rock Mining	Indirect and Induced Impact of Hard Rock Mining	Total Impact of Hard Rock Mining
Management occupations	237	207	444
Business and financial operations occupations	116	100	216
Computer and mathematical science occupations	42	36	78
Architecture and engineering occupations	285	245	530
Life, physical, and social science occupations	155	133	288
Community and social services occupations	0	0	0
Legal occupations	1	1	2
Education, training, and library occupations	0	0	0
Arts, design, entertainment, sports, & media occupations	0	0	0
Healthcare practitioners and technical occupations	27	23	50
Healthcare support occupations	0	0	0
Protective service occupations	22	19	42
Food preparation and serving related occupations	2	2	3
Building & grounds cleaning & maintenance occupations	16	14	31
Personal care and service occupations	0	0	0
Sales and related occupations	15	14	29
Office and administrative support occupations	286	251	537
Farming, fishing, and forestry occupations	0	0	1
Construction and extraction occupations	1,920	1,676	3,597
Installation, maintenance, and repair occupations	1,034	885	1,919
Production occupations	990	847	1,837
Transportation and material moving occupations	732	632	1,363
Grand Total	5,881	5,085	10,966

Source: Minnesota IMPLAN Group, Inc. "IMPLAN Pro Data for Elko County and Eureka County, 2004". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006; Minnesota IMPLAN Group, Inc. "IMPLAN Pro Occupational Matrices". Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2006; Nevada Department of Employment, Training and Rehabilitation: Carson City, Nevada, 2007

Conclusions

The primary objective of this paper was to analyze socio-economic trends in the Elko Micropolitan S.A. mining sector and investigate the economic impacts of the Hard Rock Mining Sector on the Elko Micropolitan S.A. economy. Results of this analysis showed that by value of output and employment the Hard Rock Mining Sector was one of the top five sectors in the Elko Micropolitan S.A. economy.

However, the value and ranking of sectoral output and employment does not by itself reveal the importance of an economic sector. Another way to view the importance of an economic sector to a county economy is to investigate the sector's contribution to the economic base. Economic base or basic sectors are those economic sectors that export to economies outside the county boundary. These sectors bring dollars into the local economy for further and future economic development. The Gold, Silver and Other Metal Ore Mining Sector and the Support Activities for Other Mining Sector ranked first and fifth among the 146 economic sectors in the Elko Micropolitan S.A. in value of export. This export value is an indication of the importance of the Hard Rock Mining Sector to current and future economic development in the Elko Micropolitan S.A.

Another statistic to estimate sectoral economic base in a county's economy is location quotients. Location quotients indicate exporting sectors. If a sector's location quotient value is 1.25, the sector is designated as an exporting sector. In 2004, the Gold, Silver and Other Metal Ore Mining Sector had a location quotient value of 1,882.61 and the Support Activities for Other Mining Sector had a location quotient of 258.06 indicating these sectors were exporting sectors. The location quotient indicates that the Hard Rock Mining Sector is an important economic base sector to the Elko Micropolitan S.A. economy.

Additionally, a region-wide Elko Micropolitan S.A. input-output model was used to derive the economic, employment, and labor income impacts of the Hard Rock Mining Sector on the Elko Micropolitan S.A. economy. For First Quarter 2007, the direct output, employment, and labor income impacts in the Elko Micropolitan S.A. economy were estimated to be \$2.25 billion, 5,881 jobs, and \$535.3 million, respectively. Including the multiplier effects and economic linkages of the Hard Rock Mining Sector on the Elko Micropolitan S.A. economy, total output, employment, and labor income effects of the Hard Rock Mining Sector on the Elko

Micropolitan S.A. economy are estimated to be \$2.92 billion, 10,966 jobs, and \$732.2 million, respectively.

Lastly, the occupational impacts of the Hard Rock Mining Sector were estimated. Occupations directly impacted by the Hard Rock Mining Sector are the Construction and Extraction Occupations; the Installation, Maintenance and Repair Occupations; and the Production Occupations. Indirect occupations from activities of the Hard Rock Mining Sector such as Buildings and Grounds Cleaning and Maintenance Occupations; Office and Administrative Support Occupations, and Architects and Engineering Occupations are examples of occupational linkage impacts. If production levels of the Hard Rock Mining Sector are reduced, occupation levels would not be offset by hirings in other Elko Micropolitan S.A. sectors and occupational wage levels would be lower.

Results of this study have shown the importance of the Hard Rock Mining Sector on the Elko Micropolitan S.A. economy. Not only is sectoral output, employment, labor income and occupational impacts important but the degree that the Hard Rock Mining Sector participates in the economic base of the Elko Micropolitan S.A. is of equal or greater importance. Also, the degree of economic linkages the Hard Rock Mining Sector has on the Elko Micropolitan S.A. economy is critical. The county input-output model analysis showed that the economic, employment, labor income, and occupational linkages and impacts of the Hard Rock Mining Sector go beyond its own sector. The changes in economic activity by the Hard Rock Mining Sector in the Elko Micropolitan S.A. will greatly impact the economy and other sectors in the Elko Micropolitan S.A. economy.

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