THE IMPACT OF MINERAL COUNTY
COOPERATIVE EXTENSION
ON THE ECONOMY OF MINERAL COUNTY
THE IMPACT OF MINERAL COUNTY COOPERATIVE EXTENSION ON THE ECONOMY OF MINERAL COUNTY

Report Prepared by

Thomas R. Harris
and
George "Buddy" W. Borden

Thomas R. Harris is a Professor in the Department of Resource Economics in the College of Agriculture, Biotechnology, and Natural Resources; State Extension Specialist in the College of Cooperative Extension; and Director of the University Center for Economic Development at the University of Nevada, Reno

George "Buddy" W. Borden is an Area Extension Specialist in Community and Economic Development, University of Nevada Cooperative Extension, University of Nevada, Reno

University Center for Economic Development
Department of Resource Economics
University of Nevada, Reno
Reno, Nevada
(775) 784-1681

March 2011

The University of Nevada, Reno is an equal opportunity, affirmative action employer and does not discriminate on the basis of race, color, religion, sex, age, creed, national origin, veteran status, physical or mental disability or sexual orientation in any program or activity it operates. The University of Nevada employs only United States citizens and aliens lawfully authorized to work in the United States.
This publication, *The Impact of Mineral County Extension on the Economy of Mineral County*, was published by the University of Nevada Economic Development Center. Funds for the publication were provided by the United States Department of Commerce Economic Development Administration under University Centers Program contract #07-66-06415-01. This publication's statements, findings, conclusions, recommendations, and/or data represent solely the findings and views of the author and do not necessarily represent the views of the United States Department of Commerce, the Economic Development Administration, University of Nevada, Mineral County Commissioners, or any reference sources used or quoted by this study. Reference to research projects, programs, books, magazines, or newspaper articles does not imply an endorsement or recommendation by the author unless otherwise stated. Correspondence regarding this document should be sent to:

Thomas R Harris, Director  
University Center for Economic Development  
University of Nevada, Reno  
Department of Resource Economics  
Mail Stop 204  
Reno, Nevada 89557-0204
EXECUTIVE SUMMARY

This report provides an analysis of economic impacts of Mineral County Cooperative Extension on the Mineral County economy. Highlights of the study are stated below:

Review of Backward and Forward Impacts of Mineral County Cooperative Extension

- The impacts of Mineral County Cooperative Extension can be split between backward (demand-sided) impacts and forward (supply-sided) impacts.
- Backward (demand-sided) impacts are characterized as the economic impacts from purchases by Mineral County Cooperative Extension and expenditures by Mineral County Cooperative Extension faculty and staff.
- Forward (supply-sided) impacts are the knowledge spillovers to the Mineral County economy from Mineral County Cooperative Extension.
- Forward (supply-sided) impacts to the county are long-run impacts to the county's human capital.
- Human capital for this paper is divided into two types, which are creative and social capital.
- Creative capital was popularized by Richard Florida in his analysis of economic growth by the creative class.
- As Florida states, universities, and specifically Cooperative Extension, provide education to produce local and statewide creative class.
- Social capital is a product of investment strategies, individual or collective, consciously or unconsciously aimed at establishing or reproducing social relationships that are directly useable in the short or long run.
- Cooperative Extension provides networks for creative individuals to interact and through interaction, increase local industrial productivity and provide the basis for future local and state economic growth.
- For this paper, the forward (supply-sided) effects will not be pursued. The backward (demand-sided) effects will be estimated.

Methodology

- Export sales bring dollars to the state economy that provide for future economic growth.
- Import sales act as a leakage from the state economy.
- Expenditures by Mineral County Cooperative Extension and its faculty and staff impact the economic activity of the county's economy through the multiplier effect.
- To derive the multiplier effect and county level value of output, employment, and labor income levels, the Minnesota IMPLAN Group, Inc. input-output model was used.
Economic Impacts of Mineral County Cooperative Extension on the Mineral County Economy

- In fiscal year 2009/2010, the Mineral County Cooperative Extension direct expenditures, employment, and household income made in Mineral County were estimated to be $152.3 thousand, three (3) jobs, and $95.4 thousand, respectively.

- Give the economic inter-linkage and multiplier effect, total output impacts to the Mineral County was estimated to be $189.9 thousand. Total employment and labor income impacts in the Mineral County economy from activity by Mineral County Cooperative Extension was estimated to be 3.5 jobs and $107.5 thousand, respectively.
THE IMPACT OF MINERAL COUNTY COOPERATIVE EXTENSION ON THE ECONOMY OF MINERAL COUNTY

Introduction
This report provides an analysis of the economic impacts of Mineral County Cooperative Extension on the economy of Mineral County. This study includes an analysis of the demand-sided and supply-sided impacts of Mineral County Cooperative Extension. The demand-sided impacts are characterized as the economic impacts from purchases by Mineral County Cooperative Extension and expenditures of Mineral County Cooperative Extension faculty and staff. The supply-sided impacts are the knowledge spillovers to the Mineral County economy from Mineral County Cooperative Extension activities.

Stokes and Coomes (1998) state that in the short run, expenditure impacts will be greater than knowledge impacts. However, in the long run, knowledge impacts will impact the county economy more than expenditure impacts.

The impact of Mineral County Cooperative Extension on the economy of the Mineral County is divided into three sections. The first section discusses the demand-sided effects of Mineral County Cooperative Extension related to expenditures and its multiplier effect on the county's economy and the supply-sided effects of Mineral County Cooperative Extension related to the county's human capital and research in the county. The second section provides a review of input-output analysis for estimation of impacts. The third section shows the multiplier impacts of Mineral County Cooperative Extension on output, jobs, and household income in Mineral County. Utilizing the input-output model, this report provides estimates of the direct economic contribution of Mineral County Cooperative Extension as well as the indirect and induced output, employment, and household income impacts.

Review of Backward and Forward Impacts of Mineral County Cooperative Extension
From the demand side, the expenditure activities of Mineral County Cooperative Extension generate economic activity for the county’s economy. When Mineral County Cooperative Extension, as an education entity, purchases inputs to generate an output such as education and outreach, Mineral County Cooperative Extension has a noticeable impact on the county’s economy. Mineral County Cooperative Extension, in its operations, demands goods and services from local providers; hires employees, which generates an increase in local income; sponsors outreach activities such as conferences, workshops, etc. that in turn, increase demand for local hotels, restaurants, etc. All of
the Mineral County Cooperative Extension activities impact the county’s economy and are described as “backward effects” or “backward linkages.”

In the supply-sided analysis, Mineral County Cooperative Extension in the long run impacts the county’s human capital, which in the new economy increases current economic activity and provides inputs for future economic growth. Batabyal and Nijkamp (2010) denote two types of capital that researchers have investigated to study economic growth in communities and regions. These two capital types are creative and social capital.

Creative capital has been popularized by Florida (2002) in his analysis of the creative class. According to Florida (2002), the creative class comprising of professionals such as doctors, engineers, lawyers, scientists, and teachers possess creative capital and this group produces ideas, information, and technology that increases industrial production and economic growth in the community. As Florida (2002) states, universities, and specifically Cooperative Extension, provide education to produce the local creative class but also, Cooperative Extension provides on-going education and networks to continue formulation and development of local creative capital.

Social capital has several meanings but this paper follows the definition proposed by Bourdieu (1986), Coleman (1988), and Putnam (2000). Social capital as defined in this paper is a product of investment strategies, individual or collective, consciously or unconsciously aimed at establishing or reproducing social relationships that are directly usable in the short or long term (Bourdieu, 1986). Cooperative Extension provides networks for creative individuals to interact and through this interaction increase local economic productivity and provide a basis for future county economic growth. Since the basic objective of this study is to estimate the economic impacts by Mineral County Cooperative Extension on the economy of Mineral County, the “forward effects” approach will not be pursued.

**Methodology**

This study will estimate the economic impacts of Mineral County Cooperative Extension on the economy of Mineral County. Basic multipliers and the economic models used for this study will be discussed in this section.
Some Basic Concepts of State 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 the county. Such a business is designated as 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). 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 Mineral County Cooperative Extension and its impact on the Mineral County economy. The expenditures of Mineral County Cooperative Extension could be considered a basic industry as it draws dollars from outside the area. These dollars may hire people from the household sector such as administrative personnel or extension educators employed at Mineral County Cooperative Extension. However, most of the local economic linkages are from Mineral County Cooperative Extension purchasing goods and services from the local 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 county economy.
**Economic Model**

The regional impacts for this study were estimated using IMPLAN (Impact Analysis for Planning), an economic input-output model (Minnesota IMPLAN Group, Inc., 2010). Input-output models are constructed based on the concept that all industries within an economy are linked together; that is the output of one industry becomes the input of another industry until all final goods and services are produced. Input-output models can be used to analyze the structure of a regional economy and/or to estimate economic impacts of a new business or industry, loss of a business or industry, or changes in governmental policies. For this analysis, an economic model for Mineral County was constructed using the IMPLAN software and data, and used to derive the economic impacts of Mineral County Cooperative Extension. Because the estimated linkages between economic sectors are fixed to the relationships at a particular point in time, input-output models are static and do not account for changes in technology or the entrepreneurial adaptations of the local economy to meet the demands of Mineral County Cooperative Extension.

IMPLAN input-output models provide three economic measures that describe the economy: value of output, labor income, and employment. Value of output is the total value of goods and services produced by businesses in the study area. Labor income is the sum of employee compensation (including all payroll costs and benefits) and proprietor income. Employment represents the annual average number of employees, whether full or part-time, of the businesses or industry producing outputs.

Total economic effects include direct effects attributed to the activity being analyzed, as well as the additional indirect and induced effects resulting from money circulating throughout the economy.\(^1\) 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 operation of Mineral County Cooperative Extension. The impacting business, such as Mineral County Cooperative Extension, 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 the study area 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 multiplier effect.

---

\(^1\) Effects are not the same as economic benefits because effects are generated with inputs that would have an economic value in other uses. These opportunity costs must be deducted from effects to derive the net economic benefits to society (or net change in social welfare) that are used in benefit-cost analysis.
The IMPLAN input-output software will be employed to derive the economic, labor income, and employment impacts of the Mineral County Cooperative Extension on the economy of Mineral County (Minnesota IMPLAN Group, Inc., 2010).
Cooperative Extension is a three-way partnership between the federal, state, and local governments. All three entities join to support county level Cooperative Extension activities. Mineral County supports the Mineral County Cooperative Extension office with annual funding of $19,724. Mineral County Cooperative Extension has been very successful in applying for and receiving outside funding and grants. From the $19,724 invested during fiscal year 2009/2010 by Mineral County, Mineral County Cooperative Extension has been successful in leveraging another $255,822 in grants and contracts. These grants and contracts along with Mineral County's investment of $19,724 have yielded a total operating budget for Mineral County Cooperative Extension of $275,546.

**Economic Impacts of the Mineral County Cooperative Extension Office on the Economy of Mineral County**

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 was used to derive economic linkages for Mineral County. The economic, employment, and labor income impacts of the local county extension office in Mineral County was estimated. Table 1 shows the impacts of the activities by the local county extension office on the Mineral County economy.

From Table 1, the Mineral County Cooperative Extension office in fiscal year 2009/2010 had $152.3 thousand in local economic activity, hired three (3) people, and had local salaries and wages of $95.4 thousand. Given the multiplier effects, the Mineral County extension office had total economic impacts of $189.9 thousand in fiscal year 2009/2010. This means that beyond the direct economic activity of $152.3 thousand, the indirect and induced impacts of the Mineral County Cooperative Extension office was $37.7 thousand. 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 local household interactions.
Also from Table 1, the Mineral County Cooperative Extension office had total employment and labor income impacts of 3.50 jobs and $107.5 thousand, respectively, in the Mineral County economy. This means that due to the economic linkages of the Mineral County extension office, an additional 0.50 jobs and $12.1 thousand in labor income were created in Mineral County from indirect and induced linkages.

<table>
<thead>
<tr>
<th>Category of Impacts</th>
<th>Direct</th>
<th>Indirect or Induced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>$152,253</td>
<td>$37,664</td>
<td>$189,917</td>
</tr>
<tr>
<td>Employment</td>
<td>3.00</td>
<td>0.50</td>
<td>3.50</td>
</tr>
<tr>
<td>Labor Income</td>
<td>$95,378</td>
<td>$12,165</td>
<td>$107,543</td>
</tr>
</tbody>
</table>

**Conclusions**

The primary objective of this report was to analyze the leveraging of resources by the Mineral County Cooperative Extension office and estimate the economic impacts of the local extension office’s activities on the economy of Mineral County. Results of this analysis showed that the local Cooperative Extension office leverages its county funds to increase its activity in the county and is a positive economic, employment, and household income impact on the economy of Mineral County.

From the mill rate, the Mineral County Cooperative Extension office receives $19,724 from the county for operations. By applying for and receiving grants, Mineral County Cooperative Extension had an annual operating budget in fiscal year 2009/2010 of $275,546. This means for every one dollar invested by Mineral County government in the Mineral County Cooperative Extension office, the local Cooperative Extension office leverages another $13.

Lastly, a county-wide Mineral County input-output model was used to derive the economic, employment, and household income impacts of the Mineral County Cooperative Extension office’s operations on the economy of Mineral County. In fiscal year 2009/2010, the direct output, employment, and labor income impacts of the Mineral County Cooperative Extension office were $152.3 thousand, 3.0 employees, and $95.4 thousand, respectively. Including the multiplier effects and economic linkages of the Mineral County Cooperative Extension office’s operations on the Mineral County economy, total output, employment, and household income impact of the local extension office on the Mineral County economy were estimated to be $189.9 thousand, 3.5 employees, and $107.5 thousand, respectively.
REFERENCES


