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MULTI-REGIONAL ECONOMIC IMPACT MODEL FOR COLORADO RIVER COMMUNITIES INCLUDING:

**LAUGHLIN
BULLHEAD CITY
FORT MOHAVE
MOHAVE VALLEY
GOLDEN VALLEY**

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Acknowledgments

This report is the fifth in a series of studies currently being conducted on the Laughlin and Bullhead City region to define the social and economic interactions between communities in the region. The program team would like to express a special thanks to the Laughlin Town Manager's office, Laughlin Chamber of Commerce, City of Bullhead City and Bullhead City Economic Development Authority for providing financial support for this program. Finally, the program team would also like to thank the regional advisory committee and business community for their direction and ongoing participation in monthly workshops.

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INTRODUCTION

The primary intent of this study is to define the economic structure and interactions between bordering communities in the Colorado River Region. Understanding these interactions would enable the region to develop an economic impact assessment tool to estimate total economic impacts and distributions between communities for current activities and projected changes. Development of a multi-regional input-output model was thought to be the best approach to estimate these interactions and impacts. A three-region input-output model was developed to represent five zip code areas in the Colorado River Region (Figure 1). The first zip code area includes Laughlin, Nevada (89029). The second region included the two Bullhead City, Arizona, zip code areas (86429 & 86442). The third region included Arizona zip code areas of Fort Mohave (86426), Mohave Valley (86440) and Golden Valley (86413). The third region is less developed, but has significant importance in the region for providing residential housing that supplies labor force to the other two regions. This area has also started to develop commercially and should provide additional future opportunities for business/industry development.

This report discusses the input-output methodology and procedures used to develop the Colorado River Region multi-regional input-output model. Application of this methodology will be presented in future studies that will estimate the total economic impacts of tourism on the regional economy.

INPUT-OUTPUT METHODOLOGY

Measuring economic impacts involves an analysis of how a region's economy functions internally in conjunction with economic leakages to outside economies. Conceptually, a region's economy can be viewed as a barrel (Figure 2). This barrel is connected to other regions through two types of flows, product flows and dollar flows. The product flows represent the inflow of input purchases from outside the region, which are combined with the local resource pool (i.e. land, water, mineral, labor, management, technology, and capital) to produce products and services as outputs. Some of these products and services are sold to businesses, consumers, and institutions external to the Colorado River regional economy, while others are consumed internally in the Colorado River regional economy.

Running counter to the product flows are dollar flows. The dollar flows represent the inflow of dollars from the external sales of regional products and services outside the regional economy. These dollars are then re-spent in the regional economy as local resources are combined with imported inputs to produce new products and services. The internal re-spending continues until the external sale dollars eventually "leak" from the regional economy, replacing the imported inputs used-up in local production processes. This internal re-spending is sometimes referred to as the "multiplier" or "secondary" effects. Economic impact analysis focuses on the dollar flows because it provides a common unit of measurement (i.e. the dollars) for aggregating, defining, and comparing economic trade patterns.

Figure 1. Regional Map by Zip Code Area

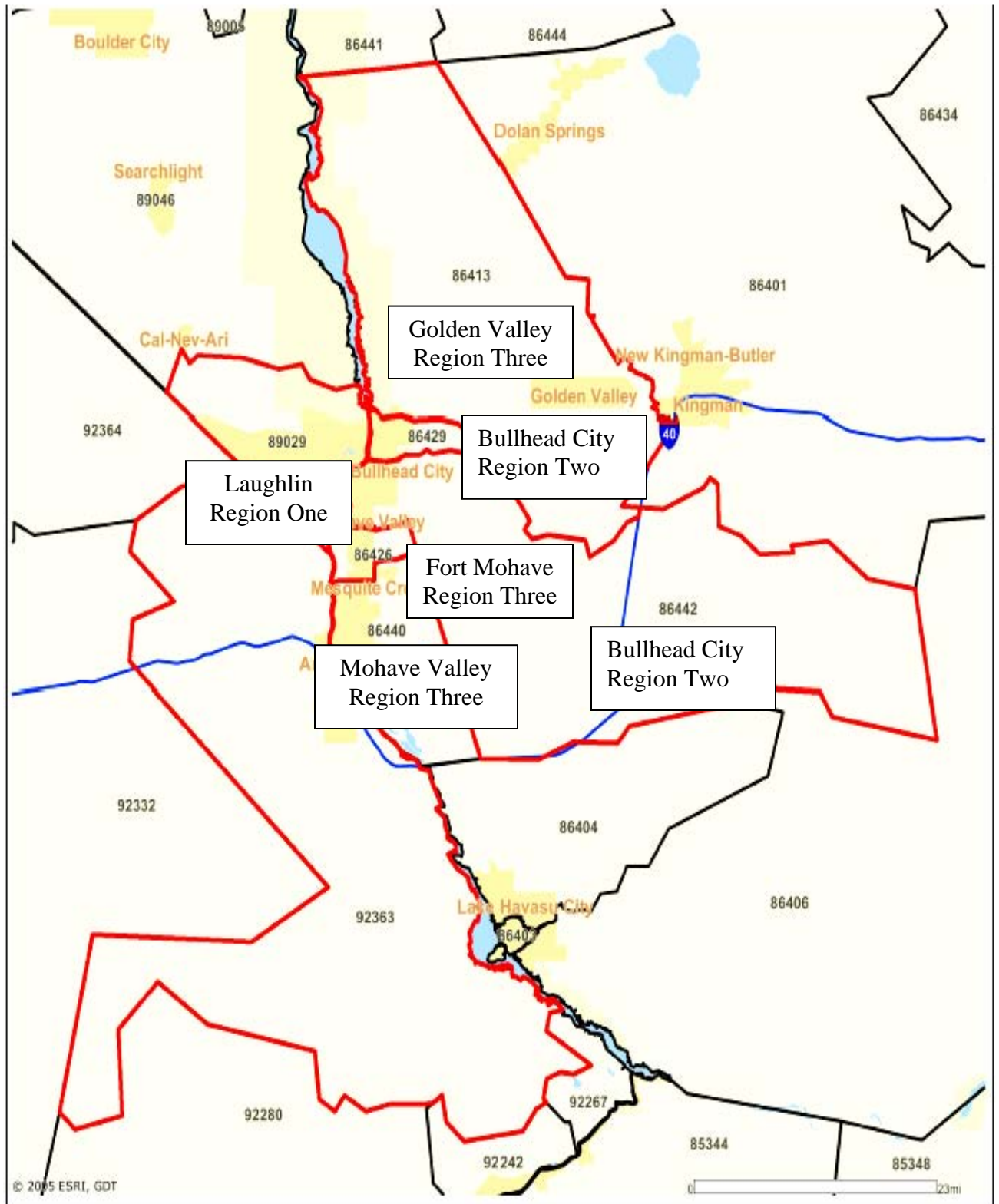
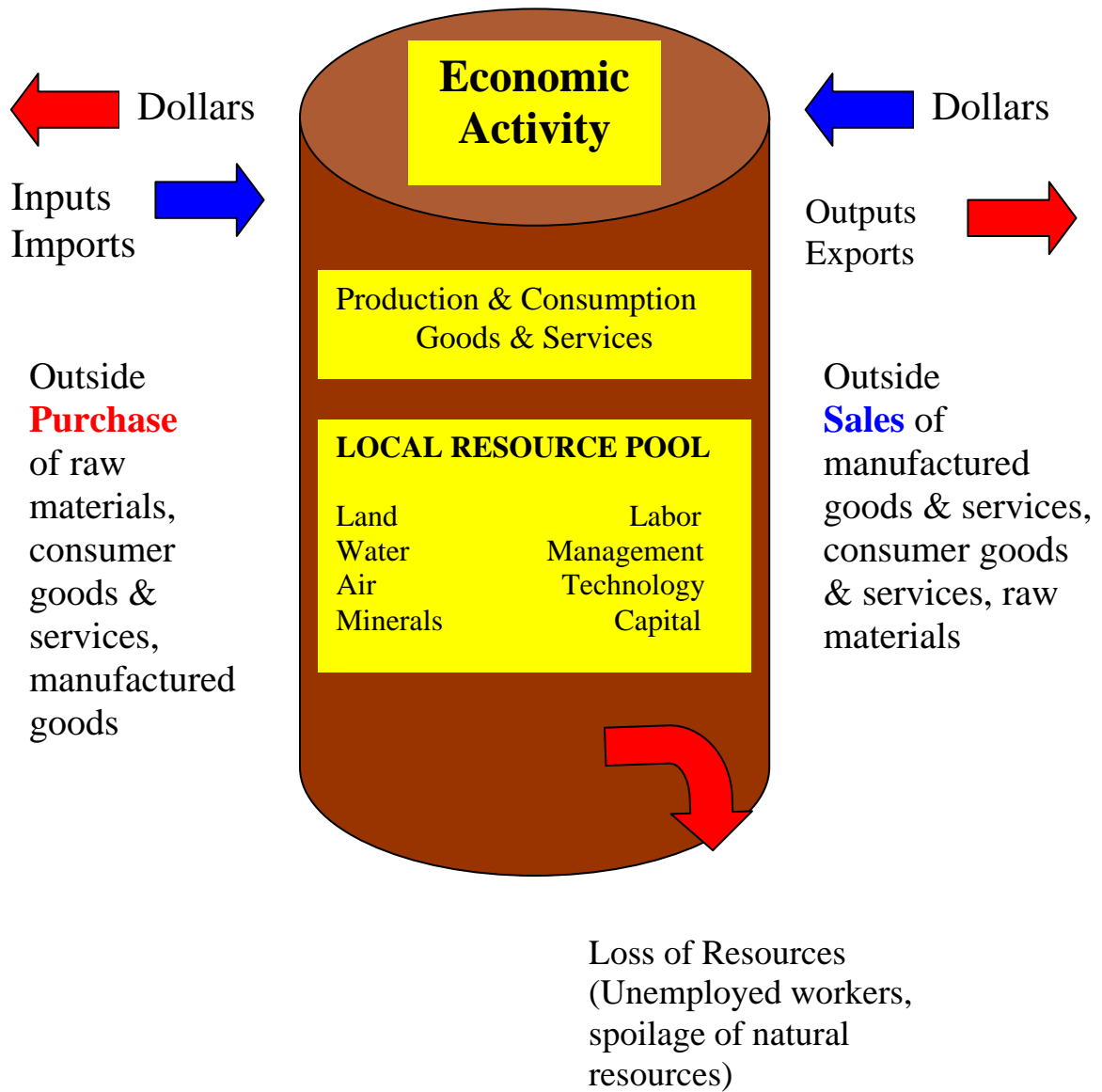


Figure 2. Community Economic System



From this perspective, the economic impact of a specific business activity on the region's economy depends on both the amount of dollars flowing into the region (i.e. value of local resources) that occurs before the dollars from the external sales leave the region's economy. The larger the value of external sales and the value of local resources used in the production process, the larger the economic impact of the business activity on the region's economy. The smaller the value of the external sales and the smaller the value of local resources used in the production process, the smaller the economic impact of the business activity on the region's economy.

It is important to consider the effects of the internal re-spending when measuring economic impact. Each time a dollar from outside sales is re-spent in the region's economy, it generates additional business activity, employment, and personal income for residents. In some cases, the effects of internal re-spending may be greater than the initial effects of the external sale. Both external and internal re-spending is important to the region's economy. External sales initiate business activity within the region, while the internal re-spending maximizes the benefits the region realizes from trade with the rest of the world. As a result the size of the region's economy depends not only on the amount of external sales that bring new dollars into the region but also on the amount of internal re-spending that the region is able to generate from these new dollars.

Input-Output Models

Input-Output (I-O) models are typically used to measure economic impacts at the regional level. An input-output model is a mathematical representation of the purchasing and sales patterns of businesses, consumers, and institutions within the region. It is essentially a map of dollar flows between sectors in the region's economy and the dollar flows between sectors in the region's economy and the rest of the world. This map describes how the region's economy functions. With this information it is possible to: 1) describe the current economic structure and the role that individual business activities play in that structure by tracing current dollar flows through the region's economy, and 2) estimate the effects of changes in a business activity on the region's economy by modifying the dollar flows and observing the resulting changes in economic activity. Also by observing the relationships between business activity and other regional variables such as employment, tax revenue, and population, it is possible to estimate the changes in these variables resulting from a change in an individual business activity.

The basic components of the input-output model are the transactions table, the direct requirements table and the total requirements table. Each of these components is discussed in the following pages.

Transaction Table

The transactions table constitutes the heart of the I-O model and is based on basic accounting principles. It provides a picture or snapshot of the total local economy for a specific point in time. The row of each producing sector defined in the model represents the dollar value of sales or value of production that a particular sector makes to each of the column sectors within a given time frame, usually one year. Reading down the sector

column shows how the dollars are distributed or the purchases required to produce goods or services required for that sector's sales. Since all rents, profits, and imports are included in the sector column, the sector column total must equal its row total.

Table 1 shows a highly aggregated transactions table. This transactions table is only an example and does not represent any specific economy. Within the input-output framework the transactions table is divided into four areas, 1) producing or intermediate sectors, 2) final demand sectors, 3) final payment sectors, and 4) household sectors. Each of these areas is briefly discussed below with reference to Table 1.

Producing or intermediate sectors represent the goods and services produced by each sector or grouping of industries within the specified economy. Their output may be used as inputs for another intermediate sector, used for final consumption, or exported from the region. These sectors will be found in the upper left-hand portion of the transactions table and represented as both a row and a column identified by the sector name.

Final Demand Sectors represent the final consumption or last transaction for products and services. Government consumption, capital formation, and exports are major components of final demand sectors. The final demand sectors are displayed as columns only and are found in the right hand portion of the transactions table. The households' column may be considered as either an intermediate or final demand sector. Unless otherwise stated, households are defined as an intermediate sector in the Laughlin/Bullhead City model.

Final Payments Sectors represent payments from the processing sectors for profits, dividends, royalties, taxes, and imports of inputs not produced in the region. These sectors are represented by rows found in the bottom left-hand portion of the transactions table.

Households can be treated as an intermediate sector with the households' column and the households' row representing the last sector in the intermediate portion of the transactions table. This approach considers the induced affects of subsequent rounds of expenditures as will be explained later. Alternatively, the households' column may be included in final demand and represent final personal consumption within the region. The households' row would then appear in the final payments section of the table and represent personal income or wages received in exchange for labor.

As previously mentioned, Table 1 shows a highly aggregated transactions table with four endogenous producing sectors, including households. Exports represent the final demand sectors and imports depict the final payments sectors. The agriculture sector represents agriculture production, agriculture services, and forestry in this example. The total output, or value of agriculture production is \$933, comprised of \$296 of intra-sector sales, no sales to mining, \$72 in sales to services and \$35 worth of sales to households. There is a total of \$403 of sales to intermediate demand or the local producing sectors and household consumption. The other \$530 is sales to final demand from the agriculture producing sectors. Reading down the agriculture column, there is \$677 spent to purchase goods and services from the producing sectors and \$256 going to the final payments sectors, or imports. Total outlay or expenditures for agriculture total \$933, the same as its row total.

Table 1. Simplified Input-Output Transactions Table.

	Producing/Purchasing Sectors				Final Demand	
Selling Sectors	Ag.	Mining	Services	House-Holds	Exports	Total Output
Agriculture	\$296	\$0	\$72	\$35	\$530	\$933
Mining	\$0	\$226	\$1,263	\$0	\$2,410	\$3,899
Services	\$136	\$512	\$2,083	\$2,296	\$5,405	\$10,432
Households	\$245	\$435	\$3,039	\$59	\$2,451	\$6,229
Imports	\$256	\$2,726	\$3,975	\$3,839	N.A.	N.A.
Total Outlays	\$933	\$3,899	\$10,432	\$6,229	N.A.	N.A.

Direct Requirements

A direct requirements table is computed from the transactions table. Each of the column entries in the transactions table is divided by the column total. This allows the direct requirements to be expressed in percentages. The sum of each producing sector column in the direct requirements table must total to one or 100% (see table 2). Only the columns have meaning in the direct requirements table. The final demand sectors are omitted from the direct requirements table. The direct requirements table may be referred to as the A matrix, as that is the way it is usually expressed in mathematical terms.

Table 2. Direct Requirements Table.

	Purchasing Sectors			
Selling Sectors	Ag.	Mining	Services	Households
Agriculture	0.317	0.000	0.007	0.006
Mining	0.000	0.058	0.121	0.000
Services	0.146	0.131	0.200	0.369
Households	0.263	0.112	0.291	0.009
Imports	0.274	0.699	0.381	0.616
Total Outlays	1.000	1.000	1.000	1.000

Total Requirements

The total requirements table is based on mathematical manipulation of the direct requirements table or I-A matrix. Only the producing sectors which are considered the endogenous portion of the A matrix are utilized. The final payments sectors are disregarded for computation of the total requirements. The total requirements shown in Table 3 are the inverse of the I-A matrix. Each column total in the total requirements table is the final demand multiplier for that particular sector. Final demand multiplier is the original dollar received from delivers to final demand, usually exports, plus the summation of the amounts of that dollar that remains in the economy each time it changes hands. For example, a final demand multiplier of 2.0 suggests that the original dollar turned over enough times with some of it remaining in the economy to generate an additional one-dollar of economic activity.

Table 3. Total Requirements Table.

	Purchasing Sectors			
Selling Sectors	Ag.	Mining	Services	Households
Agriculture	1.475	0.004	0.019	0.015
Mining	0.069	1.097	0.193	0.072
Services	0.536	0.276	1.500	0.561
Households	0.556	0.206	0.468	1.187
Total	2.636	1.583	2.180	1.836

COLORADO RIVER MULTI-REGIONAL INPUT-OUTPUT ECONOMIC MODEL

The Colorado River multi-regional input-output (I-O) economic model was designed to provide a tool that the region could use to estimate industry and policy economic impacts. For example, what impact does tourism have on the regional economy? The real value of this multi-regional input-output economic model is that it is capable of estimating the total industry economic impacts but also distributing those impacts across three defined regions including Laughlin, Nevada, Bullhead City, Arizona, and adjacent Mohave County, Arizona, communities of Fort Mohave, Mohave Valley, and Golden Valley. For the purpose of this paper, the Fort Mohave, Mohave Valley, and Golden Valley communities will be referred to as Other Mohave County Communities.

The Colorado River Region is very unique in that the primary industry, casino tourism, is located in Laughlin, Nevada, and the majority of the region's employment base lives in bordering communities in Arizona. Several years ago, bordering communities provided limited support industries (retail and service) that serviced residents living in the region. Today, support and basic export industries have significantly expanded in all communities creating more local shopping opportunities and having a greater economic impact on the region. So, this research program and modeling is extremely interested in better understanding where employees live, where they earn their incomes, and where they spend their income.

Model Construction

There are two approaches to constructing an I-O economic model: through the use of primary data collected in the community, or using secondary data. Secondary data models are available from various vendors such as REMI and IMPLAN that can be used for economic impact analyses. The use of primary data is generally recognized as providing the highest level of accuracy, but it also has a very high cost. The use of secondary data models are the least expensive, but the accuracy is often questionable for small economic regions. To obtain the highest level of accuracy within limited cost constraints a combination of primary and secondary data were used to develop the Colorado River multi-regional input-output economic impact model. A model developed for Clark County, Nevada, from the Nevada State I-O economic model was used as the starting point. This model includes a casino sector, which is not available in standard secondary I-O economic models. Primary data were collected from the Laughlin casinos and Mohave Generating Station power plant to localize the data to the study area. Mohave County, Arizona, IMPLAN data were used to adjust expenditure data in the Arizona market. A household survey, funded by the region, was administered to estimate the expenditure patterns of people living in the area. This was a critical need, as personal consumption expenditures of people living in Laughlin and Bullhead City were found to be quite different from those in the Clark County model which is heavily weighted by Las Vegas residents. This information was used to localize the household expenditures to the local area. Information from the survey also provided some additional data for the income patterns of people working in the area.

Model Sectors

The Colorado River multi-regional input-output model was designed with an aggregation scheme to use the minimum number of endogenous sectors (local) needed to estimate the economic impacts from tourism related business activity. Sectors common to all three geographic areas were identified as: Agriculture, Construction, Manufacturing, Transportation/Communication/Public Utilities (TCP), Trade, Eating/Drinking/Lodging (EDL), Services, Health, Public Schools, Local Government, and Households. Employment in the casino industry was thought to make the greatest contribution to inter-area economic activity within the study area. A casino sector was added to the Laughlin section of the model to estimate the economic contributions the casinos make to not only Laughlin, but also Bullhead City and the Other Mohave County Communities. Information from local leaders indicated potential changes in operations of the local electric generating plant could have significant impacts on the local economy. Although it was not originally included in the model design, a power plant sector was included and demonstrated in the model to estimate specific economic impacts that may be useful in the future.

Economic Model Structure

As described above, one very good use of a multi-regional input-output model is to map out the structure of a region's economy. This mapping can provide very useful information for an economy to better understand how goods and services flow in an economy or between economies. It also provides the first measure for regional economic leakage estimates.

Tables 4 to 6 show the direct requirements for each region included in the Colorado River multi-regional input-output economic model. The three regions have identical sectors with the exception of Laughlin which has two additional sectors; power plant and casinos. Each region is color coded including blue for Laughlin, red for Bullhead City, and green for Other Mohave County Communities. Direct requirements are calculated using only the columns (consuming sectors) as a percentage of total output sales. The sum of each consuming sector column in the direct requirements table must total to one or 100%. Under the multi-regional structure, each region shows the business and household sector interactions between each region. For example, reading down the column in Table 4, Laughlin region households sector (#13) purchases equal 0.024683 percent of each dollar from casinos (#8), 0.039914 percent of each dollar from trade (#18) businesses in Bullhead City and 0.01743 percent of each dollar from trade (#29) businesses in Other Mohave County Communities. Another way to interpret this is that for every dollar spent in the region by a Laughlin household; include nearly \$0.02 from Laughlin casinos, \$0.04 from Bullhead City trade businesses, and \$0.01 from retail trade business in Other Mohave County Communities.

Table 5. Bullhead City Regional Direct Requirements.

BULLHEAD CITY ECONOMIC SECTORS (Sales)													
			14	15	16	17	18	19	20	21	22	23	24
			Agric	Construct	Manuf.	T/C/PU	Trade	E/D/L	Services	Health	Schools	Loc Gov	BHC HH
	1	Agric	0.000043	0.000015	0.000040	0.000002	0.000000	0.000002	0.000006	0.000000	0.000002	0.000004	0.000001
	2	Construction	0.000204	0.000017	0.000154	0.000463	0.000247	0.000232	0.000454	0.000082	0.000034	0.000109	0.000048
L	3	Manufacture	0.000049	0.000405	0.000373	0.000064	0.000078	0.000191	0.000094	0.000085	0.000108	0.000070	0.000126
A	4	T/C/PU	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
U	5	Power Plant	0.003429	0.000459	0.003595	0.001436	0.003503	0.003207	0.000916	0.000994	0.003517	0.004904	0.003397
G	6	Trade	0.000273	0.000832	0.000512	0.000210	0.000161	0.000158	0.000107	0.000132	0.000146	0.000148	0.001797
H	7	E/D/Lodging	0.000048	0.000035	0.000038	0.000031	0.000122	0.000008	0.000091	0.000030	0.000053	0.000156	0.000789
L	8	Casinos	0.000024	0.000000	0.000000	0.000000	0.000000	0.000003	0.000013	0.000019	0.000002	0.000012	0.024683
I	9	Services	0.000279	0.000611	0.000267	0.000477	0.000847	0.000448	0.001308	0.000506	0.000252	0.000511	0.001009
N	10	Health	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000241	0.000000	0.000023	0.001061
	11	Public School	0.003617	0.002855	0.003679	0.003339	0.001372	0.002640	0.004413	0.002663	0.000000	0.001533	0.009957
	12	Loc Gov.	0.001512	0.001084	0.001995	0.001701	0.001572	0.001567	0.003108	0.002070	0.000738	0.001961	0.007291
	13	Laughlin HH	0.001968	0.000676	0.001805	0.000112	0.000012	0.000087	0.000255	0.000015	0.000083	0.000200	0.000024
	14	Agric	0.011379	0.000924	0.008566	0.025852	0.013780	0.012923	0.025333	0.004601	0.009550	0.058754	0.000115
	15	Construction	0.000861	0.007166	0.006592	0.001128	0.001384	0.003375	0.001662	0.001505	0.001906	0.001246	0.002661
B	16	Manufacture	0.000771	0.000798	0.001516	0.004251	0.001090	0.000471	0.000779	0.000364	0.001062	0.000971	0.002223
U	17	T/C/PU	0.006068	0.018471	0.011376	0.004664	0.003574	0.003515	0.002368	0.002922	0.003253	0.003287	0.001687
L	18	Trade	0.000792	0.000582	0.000630	0.000509	0.002013	0.000138	0.001508	0.000502	0.000879	0.002577	0.039914
L	19	E/D/Lodging	0.007871	0.017238	0.007543	0.013463	0.023901	0.012642	0.036916	0.014292	0.007120	0.014423	0.013014
H	20	Services	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000829	0.000000	0.000079	0.028471
E	21	Health	0.001517	0.001197	0.001543	0.001400	0.000576	0.001107	0.001850	0.001117	0.000000	0.000643	0.014601
A	22	Public School	0.001480	0.001061	0.001952	0.001664	0.001538	0.001533	0.003041	0.002026	0.000722	0.001919	0.004175
D	23	Loc Gov.	0.004820	0.001656	0.004421	0.000275	0.000030	0.000214	0.000626	0.000037	0.000204	0.000489	0.007134
	24	BHC HH	0.012280	0.000997	0.009244	0.027900	0.014872	0.013946	0.027339	0.004966	0.008011	0.023690	0.001685
O	25	Agric	0.002437	0.020272	0.018649	0.003192	0.003915	0.009548	0.004701	0.004259	0.005393	0.003525	0.000281
T	26	Construction	0.000186	0.000192	0.000365	0.001023	0.000262	0.000113	0.000188	0.000088	0.000256	0.000234	0.002872
H	27	Manufacture	0.002650	0.008067	0.004969	0.002037	0.001561	0.001535	0.001034	0.001276	0.001421	0.001436	0.006287
E	28	T/C/PU	0.000126	0.000092	0.000100	0.000081	0.000319	0.000022	0.000239	0.000080	0.000139	0.000409	0.000406
R	29	Trade	0.004063	0.008898	0.003894	0.006950	0.012337	0.006526	0.019056	0.007378	0.003675	0.007445	0.017433
	30	E/D/Lodging	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000393	0.000000	0.000038	0.002064
M	31	Services	0.000692	0.000546	0.000704	0.000639	0.000263	0.000505	0.000844	0.000509	0.000000	0.000293	0.014697
O	32	Health	0.001682	0.001206	0.002219	0.001892	0.001748	0.001743	0.003457	0.002302	0.000821	0.002181	0.001732
H	33	Public School	0.000000	0.013585	0.015852	0.011473	0.026570	0.020835	0.031544	0.031997	0.053472	0.007612	0.001905
A	34	Loc Gov.	0.419359	0.228743	0.265639	0.192389	0.448081	0.343214	0.308299	0.515757	0.898541	0.127694	0.008108
V	35	Mojave HH	0.055915	0.000610	0.001973	0.001319	0.000467	0.008514	0.004111	0.024428	0.004147	0.000803	0.000000
E	36	Other F.P.	0.095126	0.126989	0.166220	0.198165	0.176130	0.183070	0.241364	0.116644	0.031539	0.063855	0.310973
	37	Imports	0.358483	0.533718	0.453576	0.491899	0.257673	0.365969	0.272974	0.254891	0.037048	0.666766	0.467381
	*	Col Totals	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Table 6. Other Mohave County Regional Direct Requirements.

OTHER MOHAVE COUNTY ECONOMIC SECTORS (Sales)													
		25	26	27	28	29	30	31	32	33	34	35	
		Agric	Construct	Manufac.	T/C/PU	Trade	E/D/L	Services	Health	Schools	Loc Govt	Mohave HH	
	1	Agric	0.000043	0.000015	0.000000	0.000002	0.000000	0.000002	0.000006	0.000000	0.000002	0.000004	0.000000
	2	Construction	0.000204	0.000017	0.000154	0.000463	0.000247	0.000232	0.000454	0.000082	0.000695	0.000612	0.000024
L	3	Manufacture	0.000049	0.000405	0.000373	0.000064	0.000078	0.000191	0.000094	0.000085	0.000108	0.000070	0.000064
A	4	T/C/PU	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
U	5	Power Plant	0.003429	0.000459	0.003595	0.001436	0.003503	0.003207	0.000916	0.000994	0.003517	0.004904	0.001743
G	6	Trade	0.000273	0.000832	0.000512	0.000210	0.000161	0.000158	0.000107	0.000132	0.000146	0.000148	0.000922
H	7	E/D/Lodging	0.000048	0.000035	0.000038	0.000031	0.000122	0.000008	0.000091	0.000030	0.000053	0.000156	0.000405
L	8	Casinos	0.000024	0.000000	0.000000	0.000000	0.000000	0.000003	0.000013	0.000019	0.000002	0.000012	0.099505
I	9	Services	0.000279	0.000611	0.000267	0.000477	0.000847	0.000448	0.001308	0.000506	0.000252	0.000511	0.000517
N	10	Health	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000241	0.000000	0.000023	0.000531
	11	Public School	0.003617	0.002855	0.003679	0.003339	0.001372	0.002640	0.004413	0.002663	0.000000	0.001533	0.005108
	12	Loc Gov.	0.001512	0.001084	0.001995	0.001701	0.001572	0.001567	0.003108	0.002070	0.000738	0.001961	0.003740
	13	Laughlin HH	0.001968	0.000676	0.001805	0.000112	0.000012	0.000087	0.000255	0.000015	0.000083	0.000200	0.000103
	14	Agric	0.011379	0.000924	0.008566	0.025852	0.013780	0.012923	0.025333	0.004601	0.038769	0.008382	0.000059
	15	Construction	0.000861	0.007166	0.006592	0.001128	0.001384	0.003375	0.001662	0.001505	0.001906	0.001246	0.001365
B	16	Manufacture	0.000771	0.000798	0.001516	0.004251	0.001090	0.000471	0.000779	0.000364	0.001062	0.000971	0.001140
U	17	T/C/PU	0.006068	0.018471	0.011376	0.004664	0.003574	0.003515	0.002368	0.002922	0.003253	0.003287	0.000000
L	18	Trade	0.000792	0.000582	0.000630	0.000509	0.002013	0.000138	0.001508	0.000502	0.000879	0.002577	0.020476
H	19	E/D/Lodging	0.007871	0.017238	0.007543	0.013463	0.023901	0.012642	0.036916	0.014292	0.007120	0.014423	0.006676
L	20	Services	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000829	0.000000	0.000079	0.014606
E	21	Health	0.001517	0.001197	0.001543	0.001400	0.000576	0.001107	0.001850	0.001117	0.000000	0.000643	0.005618
A	22	Public School	0.001480	0.001061	0.001952	0.001664	0.001538	0.001533	0.003041	0.002026	0.000722	0.001919	0.002142
D	23	Loc Gov.	0.004820	0.001656	0.004421	0.000275	0.000030	0.000214	0.000626	0.000037	0.000204	0.000489	0.003660
	24	BHC HH	0.012280	0.000997	0.009244	0.027900	0.014872	0.013946	0.027339	0.004966	0.041839	0.041473	0.001847
O	25	Agric	0.002437	0.020272	0.018649	0.003192	0.003915	0.009548	0.004701	0.004259	0.005393	0.003525	0.000144
T	26	Construction	0.000186	0.000192	0.000365	0.001023	0.000262	0.000113	0.000188	0.000088	0.000256	0.000234	0.001473
H	27	Manufacture	0.002650	0.008067	0.004969	0.002037	0.001561	0.001535	0.001034	0.001276	0.001421	0.001436	0.003226
E	28	T/C/PU	0.000126	0.000092	0.000100	0.000081	0.000319	0.000022	0.000239	0.000080	0.000139	0.000409	0.000208
R	29	Trade	0.004063	0.008898	0.003894	0.006950	0.012337	0.006526	0.019056	0.007378	0.003675	0.007445	0.008943
	30	E/D/Lodging	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000393	0.000611	0.000038	0.001059
M	31	Services	0.000692	0.000546	0.000704	0.000639	0.000263	0.000505	0.000844	0.000509	0.000072	0.000293	0.007540
O	32	Health	0.001682	0.001206	0.002219	0.001892	0.001748	0.001743	0.003457	0.002302	0.000821	0.002181	0.000888
H	33	Public School	0.000000	0.003170	0.003353	0.003794	0.026871	0.004715	0.014292	0.007303	0.030122	0.001162	0.000977
A	34	Loc Gov.	0.031249	0.230181	0.243058	0.020177	0.422519	0.025078	0.236631	0.455380	0.650784	0.083370	0.004160
V	35	Mojave HH	0.410386	0.008141	0.008948	0.264979	0.066479	0.329351	0.007855	0.094342	0.082849	0.004026	0.000103
E	36	Other F.P.	0.095126	0.126989	0.166220	0.198165	0.176130	0.183070	0.241364	0.116644	0.013657	0.063855	0.493358
	37	Imports	0.392122	0.535164	0.481721	0.408131	0.216922	0.379389	0.358150	0.270048	0.108850	0.746404	0.307668
	*	Col Totals	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Economic Multipliers

Economic multipliers are a product of input-output analysis, which is often used to estimate the impact of changes in production or sales in a given sector of the economy. Caution needs to be exercised in applying these multipliers because of the restrictive assumptions built into the calculations and understanding how to interpret impacts on a community. Using the input-output model to directly estimate the impact of a change in business patterns is the preferred method as it shows the distribution of changes in economic activity across sectors. Three basic types of economic multipliers are usually derived from I-O models; final demand, employment, and income.

Final demand multipliers estimate the total economic impact on the regional economy for a \$1 change in production for sales to final demand, which are usually exports. For example, in table 7 the final demand multiplier for Laughlin casinos is 1.6528, which can be interpreted that for every \$1 of economic activity generated by the casino sector an additional \$0.6528 of economic activity is generated in the regional economy.

Employment multipliers are expressed in terms of annual job equivalents. The employment multiplier helps determine how many jobs are created/supported in a community/region resulting from the initial economic activity. For example, in table 7 the Laughlin casino employment multiplier of 1.2416 can be interpreted that every job in the casino sector supports an additional 0.2416 jobs in the regional economy.

Income multipliers represent the total income change from a \$1.00 change in final demand. For example in table 7 the Laughlin casino income multiplier is 1.2326, meaning that every \$1.00 change in casino final demand sales will generate an additional \$0.2326 of income in the regional economy.

Table 7. Final Demand, Employment and Income Multipliers by Economic Sector and Regional Community.

			Final Demand Multiplier	Employment Multiplier	Income Multiplier
	1	Agriculture	1.4881	1.1195	1.2038
	2	Construction	1.6628	1.4374	1.2179
L	3	Manufacture	1.5647	1.3867	1.2318
A	4	T/C/PU	1.4346	1.4768	1.3007
U	5	Power Plant	1.1044	2.1288	1.3467
G	6	Trade	1.7895	1.1651	1.1738
H	7	E/D/Lodging	1.6890	1.1160	1.1714
L	8	Casinos	1.6528	1.2416	1.2326
I	9	Services	1.7229	1.3682	1.2468
N	10	Health	1.9357	1.3656	1.1387
	11	Public Schools	1.6690	1.3538	1.2056
	12	Loc Government	1.3898	2.4260	1.6832
	13	Agriculture	1.7632	1.2136	1.1573
B	14	Construction	1.4933	1.3183	1.2713
U	15	Manufacture	1.5434	1.2787	1.2330
L	16	T/C/PU	1.4451	1.4921	1.2807
L	17	Trade	1.7959	1.1535	1.1695
H	18	E/D/Lodging	1.6338	1.0888	1.1751
E	19	Services	1.6969	1.2470	1.2500
A	20	Health	1.8756	1.1986	1.1383
D	21	Public Schools	2.3893	1.1560	1.1186
	22	Loc Government	1.3902	1.5967	1.4229
	23	Agriculture	1.7025	1.1099	1.1506
M	24	Construction	1.4907	1.3182	1.2717
O	25	Manufacture	1.5041	1.2976	1.2469
H	26	T/C/PU	1.5490	1.2866	1.2162
A	27	Trade	1.8491	1.1642	1.1624
V	28	E/D/Lodging	1.6017	1.0758	1.1655
E	29	Services	1.5793	1.2368	1.2985
	30	Health	1.8511	1.2483	1.1374
	31	Public Schools	2.2177	1.1893	1.1479
	32	Loc Government	1.2767	1.6885	1.4835

APPENDIX

Each sector description below was developed for each market area, Laughlin, Bullhead City, and adjacent Other Mohave County communities. The only exceptions were for the Casinos and Power Plant sectors, which were only developed for Laughlin because these types of operations were only available in this area.

Agriculture: Firms engaged in agricultural production and sales, including agricultural services enterprises.

Construction: Firms engaged primarily in general contracting, heavy construction, and special trade contracting (electrical, plumbing, heating, etc.)

Manufacturing: Firms engaged primarily in the production of food, clothing, furniture, printing and publishing, leather, and other manufactured products, excluding lumber and wood products.

Transportation, Communications, Public Utilities (T/C/PU): Firms engaged in providing transportation and warehouse, communication services, radio and TV broadcasting, natural gas, water and sanitary services.

Power Plant: Firms engaged in providing electricity.

Trade: Firms engaged primarily in providing wholesale and retail items including building materials, general merchandise, grocery stores, gas stations, apparel, home furnishings, drug stores, and miscellaneous retail, excluding eating and drinking establishments.

Eating, Drinking, Lodging: Firms engaged primarily in providing meals and lodging including restaurants, drive-ins, bars, and a combination of these: also motels, hotels, condos, cabins, and private campgrounds.

Casinos: Firms engaged primarily in providing gaming, lodging, food and drink, retail and entertainment less than one establishment.

Services: Firms engaged primarily in providing personal and business services, auto repairs, and other services, except lodging, health services, and casinos.

Health: Firms engaged primarily in providing doctor, dentist, hospitals, nursing homes, and other medical and health services.

Public Schools: Local public school districts or local educational units.

Local Government: County and city governments and special districts, excluding school districts or local education.

Households: Households residing in Laughlin, Bullhead City, or Other Mohave County communities.