

# Wallowa County's Economic Structure: An Input-Output Analysis

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*“Wallowa County was isolated and self-sufficient in the early 1900’s...With plenty of timber and water, many sawmills were set up and lumber was not a problem...The county, nowadays, is much more dependent on outside industry.”*

{Agnes Roberts (Ed.), 1982. *The History of Wallowa County, Oregon*; page 60}.

## Introduction

Rural is often defined by its remoteness. Distance from transportation corridors and population centers is, as the saying goes, Wallowa County’s greatest strength and at the same time its most serious constraint to developing a robust economy. Economic and political relationships with metropolitan Oregon significantly impact all of nonmetropolitan Oregon. Even with Wallowa County’s significant effort to attract people to the area through numerous community events and a particularly welcoming approach to strangers, the County has seen relatively less population growth and economic growth than the rest of Oregon and even many other nonmetropolitan counties.

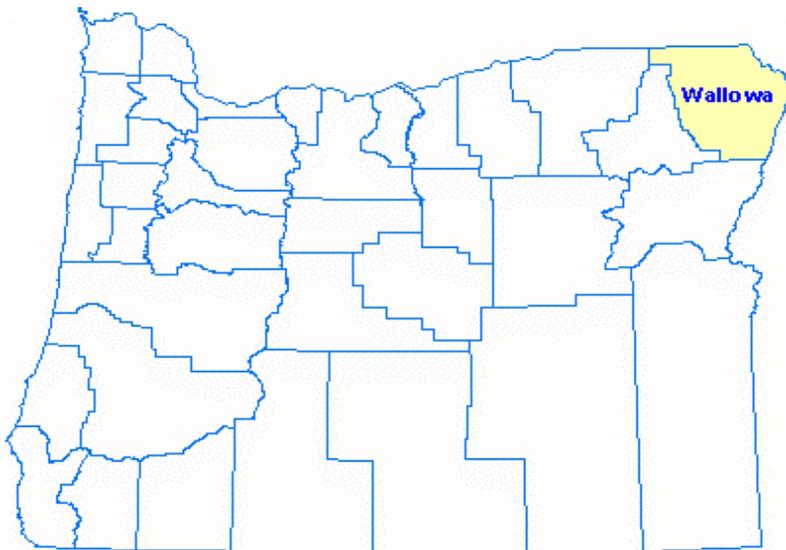
This report profiles the demographic and economic trends in Wallowa County, estimates the export base of the County and provides an overview of the Wallowa County Input-Output Model. Then the contract awards by the U.S. Forest Service for work in Wallowa County are “run” through the Model and the economic impacts to the Wallowa County economy are estimated. Finally, the report suggests some areas that Wallowa County might consider as it works to increase the resilience of its economy.

## Population and Economic Trends

Wallowa County is a nonmetropolitan county (Figure 1). In the 2000 census, 7,226 people lived within its 3,145 square miles; hence the population density per square mile was approximately 2.3 people (U.S. Census Bureau, 2003a).

The County contains four incorporated places - Enterprise with a population of 1,895, Joseph with a population of 1,054, Lostine with a population of 263, and Wallowa with a population of 869 people (U.S. Census Bureau, 2003b). Nearly half the population of Wallowa County is dispersed in unincorporated communities.

**Figure 1. Wallowa County, Oregon.**



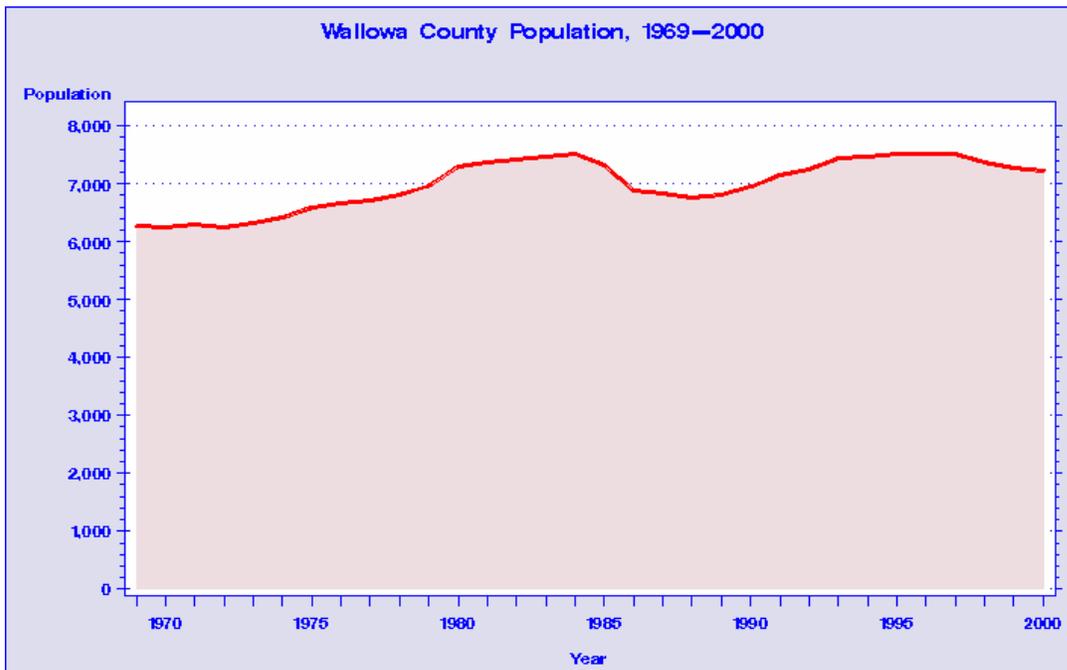
Source: Smith, Gary W. 2003. Northwest Income Indicators Project (NIIP) Web Page. <http://niip.wsu.edu>.

Wallowa County, again like many nonmetro counties nationally, is a natural resource based economy that is trying to diversify so that it can more effectively adjust to a globalized market place.

Its efforts to diversify have met with some success (e.g. establishment of bronze foundries and increased tourism related retail). Its population is slowly growing, while natural resource based industries such as agriculture and timber are declining.

Population growth is both a cause and a consequence of economic growth. Patterns of population growth and change reflect differences among regions to attract and retain people both as producers and consumers in their economy (Smith, 2003).

**Figure 2. Wallowa County Population, 1969-2000.**

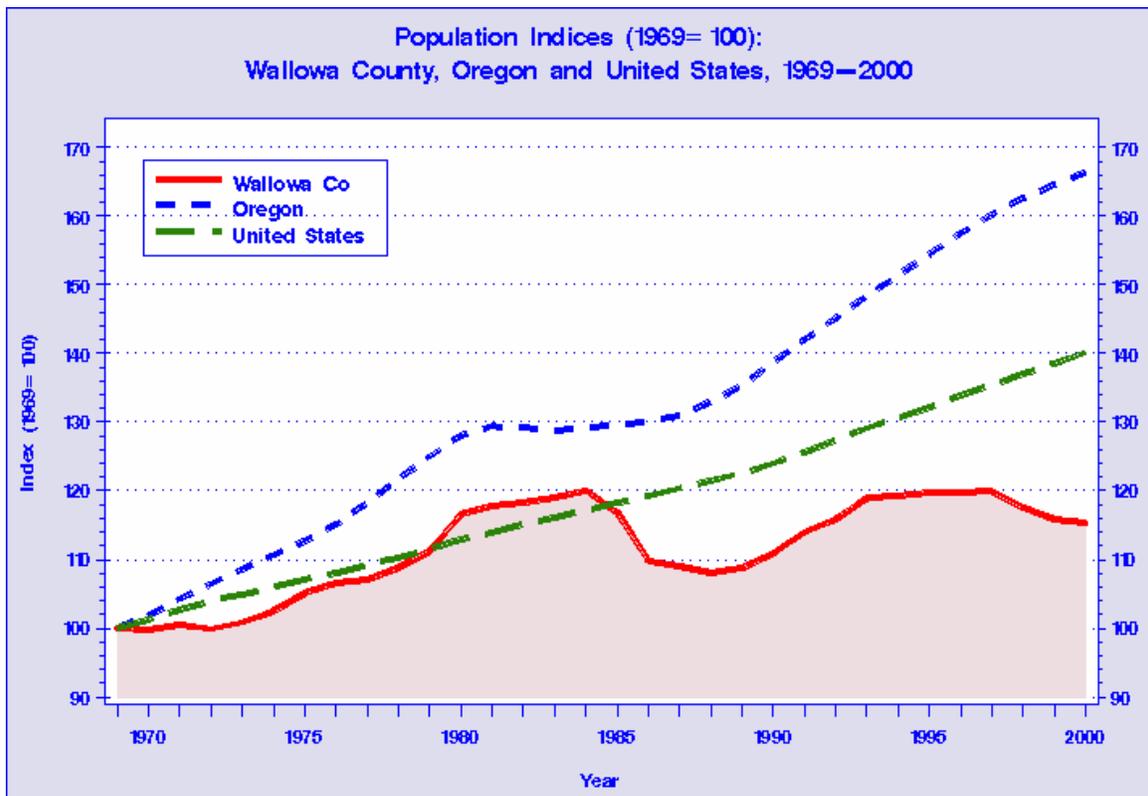


Source: Smith, Gary W. 2003. Northwest Income Indicators Project (NIIP) Web Page. <http://niip.wsu.edu>.

As Figure 2. shows, total population growth for Wallowa County over the period was 7,226 – 6,264 = 963 or 15.3%. That growth rate, as further depicted by Figure 3., is much lower than Oregon's, which was 60.8%, and that of the U.S., which was 35.5%.

For a nonmetro Oregon county like Wallowa County to grow more slowly than the U.S. or Oregon was not unusual. Yet, Nonmetro Oregon's average population growth rate was 56.8%, (Smith, 2003), and Wallowa County's much slower growth is significant, when compared to similar counties.

**Figure 3. Population Indices (1969=100).  
Wallowa County, Oregon and United States, 1969-2000.**



Source: Smith, Gary W. 2003. Northwest Income Indicators Project (NIIP) Web Page. <http://niip.wsu.edu>.

Over the last decade the median age of people in Oregon has increased from 34.5 to 36.3 years. Wallowa County's median age increased even more than Oregon's. Wallowa County went from a median age of 37.6 to 44.4 years. While this increase in median age was driven to a large degree by the aging of the baby boomers, most of whom are still in the workforce, in Wallowa County a big part of the increase in age probably came from younger people permanently moving their residences outside the County and the in-migration of retirees. The percentage of people 65 years and older has declined during that same period in Oregon from 13.8 to 12.8 percent but increased in Wallowa County from 18.9 to 19.7 percent (U.S. Census Bureau 2000c).

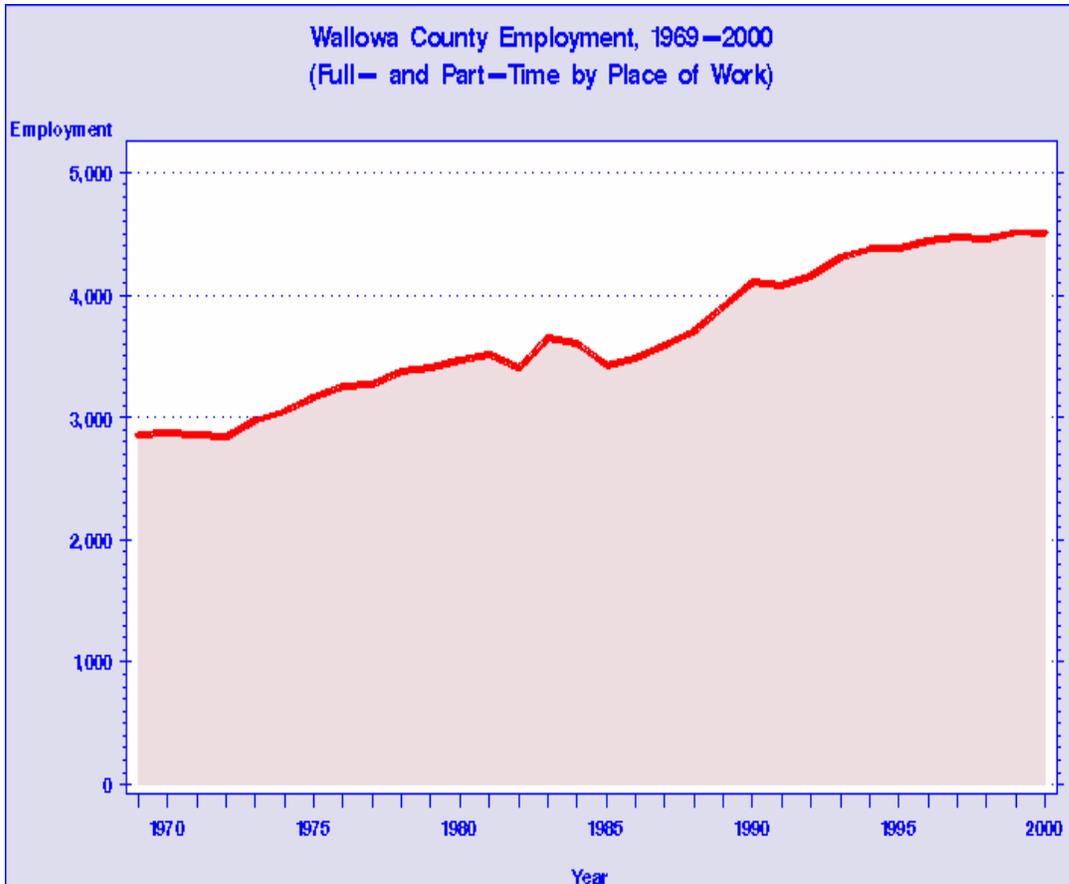
One goal of economic development is often to create an ability for the community to weather economic fluctuations or become more economically resilient. *An economically resilient community is one that can be economically shocked, quickly begin a rebound, and reach an equilibrium that may be very different than the pre-shock equilibrium, yet, provides a similar number of jobs and preserves the community's population.* "Quickly" is measured in months rather than years. *An economic shock or event is a market change that is a surprise and affects the employment growth rates and may permanently affect the employment level* (Bartik 1991; 11).

A new equilibrium is reached when the local area's attractiveness to households and firms is at least attractive enough to prevent decline (Ibid; 72). Probably the most important variable, for many people concerned with economic resilience, is employment. "Employment numbers remain the most popular and frequently cited statistics used for tracking local area economic conditions and trends (Smith 2003)."

Please note that the estimates throughout this report are for full and part-time jobs and do not necessarily represent individual people. A person may hold more than one of the jobs, which are discussed. Also, the employment estimates in the following graphs are based on place-of-work and do not include place-of-residence considerations.

In Wallowa County, employment grew by 1,657 jobs or 58.1% from 1969 to 2000 (Figure 4).

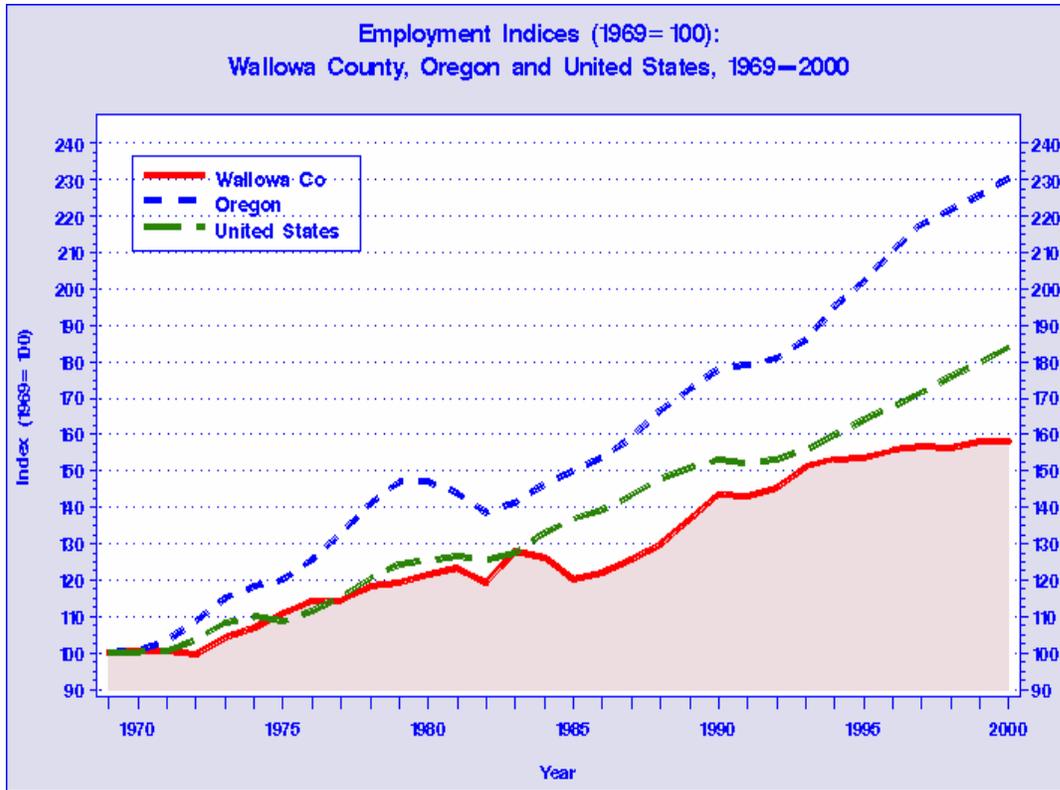
**Figure 4. Wallowa County Employment, 1969-2000.  
(Full - and Part - Time by Place of Work).**



Source: Smith, Gary W. 2003. Northwest Income Indicators Project (NIIP) Web Page. <http://niip.wsu.edu>.

Wallowa County's employment growth was once again smaller than the U.S., which had a 83.9% employment increase, and Nonmetro Oregon, which had a 101.0% increase (Smith, 2001; 3). The County's employment growth was also less than Oregon's 130.2% (Figure 5).

**Figure 5. Employment Indices (1969=100).  
Wallowa County, Oregon and United States, 1969-2000.**



Source: Smith, Gary W. 2003. Northwest Income Indicators Project (NIIP) Web Page. <http://niip.wsu.edu>.

Statewide, the composition of the workforce from 1970 to 2000 has shifted towards more service occupations, which can have a higher percentage of part-time jobs. That shift has also taken place in Wallowa County (Table 1) as Wallowa County has shifted from an agricultural and wood products economy to one where tourism's share continues to grow.

**Table 1. Wallowa County and Oregon Employment changes, 1970-2000.**

SECTOR	WALLOWA COUNTY				OREGON			
	1970	%	2000	%	1970	%	2000	%
Total full-time and part-time employe	2,871	100.0	4,510	100.0	925,914	100.0	2,118,403	100.0
By type								
Wage and salary employment	1,651	57.5	2,535	56.2	767,676	82.9	1,699,647	80.2
Proprietors' employment	1,220	42.5	1,975	43.8	158,238	17.1	418,756	19.8
Farm proprietors' employment	662	23.1	563	12.5	31,861	3.4	39,260	1.9
Nonfarm proprietors' employment	558	19.4	1,412	31.3	126,377	13.6	379,496	17.9
By industry								
Farm employment	873	30.4	683	15.1	51,467	5.6	64,818	3.1
Nonfarm employment	1,998	69.6	3,827	84.9	874,447	94.4	2,053,585	96.9
Private employment	1,484	51.7	3,050	67.6	714,790	77.2	1,784,373	84.2
Ag. services, forestry, fishing, & othe	52	1.8	190	4.2	8,606	0.9	44,524	2.1
Mining	18	0.6	0	0.0	1,797	0.2	3,217	0.2
Construction	115	4.0	307	6.8	41,190	4.4	123,253	5.8
Manufacturing	222	7.7	406	9.0	179,059	19.3	258,694	12.2
Transportation and public utilities	84	2.9	184	4.1	53,441	5.8	93,432	4.4
Wholesale trade	58	2.0	76	1.7	46,089	5.0	101,506	4.8
Retail trade	394	13.7	635	14.1	146,314	15.8	361,367	17.1
Finance, insurance, and real estate	147	5.1	269	6.0	69,173	7.5	165,766	7.8
Services	394	13.7	983	21.8	169,121	18.3	632,614	29.9
Government and government enterpr	514	17.9	777	17.2	159,657	17.2	269,212	12.7
Federal, civilian	100	3.5	143	3.2	25,519	2.8	31,075	1.5
Military	36	1.3	25	0.6	15,252	1.6	12,914	0.6
State and local	378	13.2	609	13.5	118,886	12.8	225,223	10.6

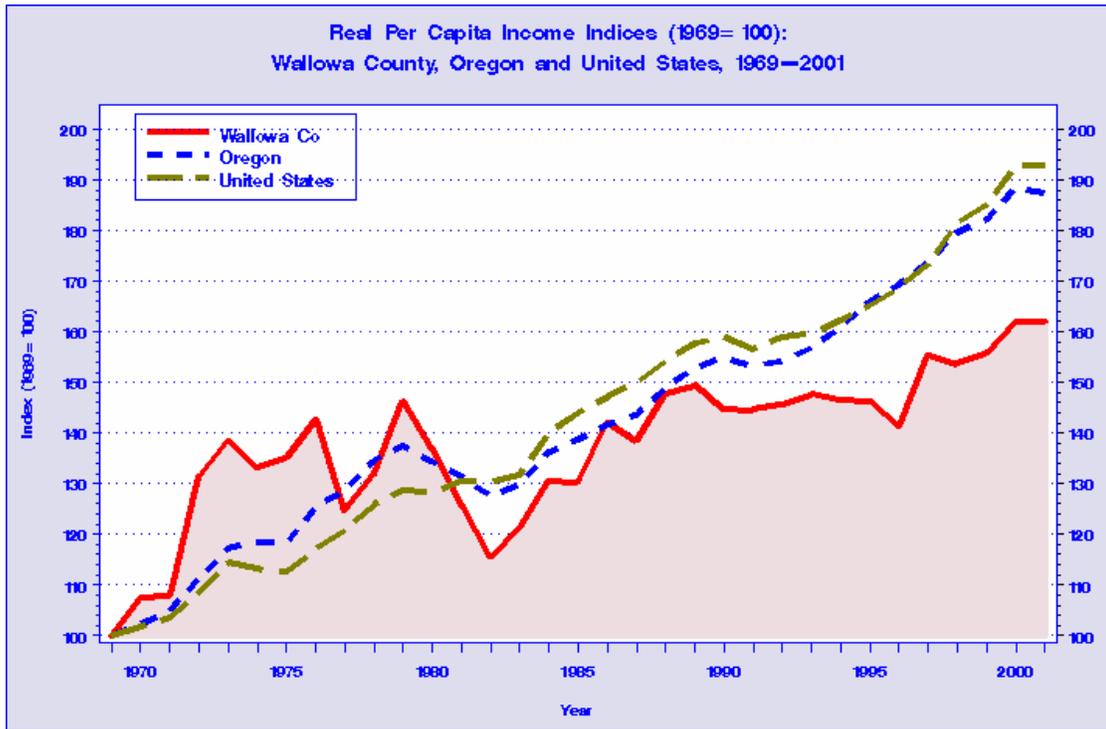
Source: U.S. Bureau of Economic Analysis 2003.

As a percentage of total employment, the Services sector in Wallowa County has grown by 58.9% (from 13.72% to 21.80%) while in Oregon, it has grown by 63.4% (from 18.27.9% to 29.9%). In addition, the Construction sector in Wallowa County grew by 69.8%, moving to an increasingly important portion of the sectoral employment at 6.81%.

Construction plays an even larger role, when its purchases from suppliers and the local spending of the salaries it pays are considered. So the growth of the Services, Construction sectors and the Retail Trade sector, have helped offset the losses in agriculture and wood products. Unfortunately, the average earnings per job in the Services and Retail Trade sectors are often much lower than in the agriculture and wood products sectors.

Wallowa County is also growing slower than Oregon, Nonmetro Oregon, and the U.S. in terms of real per capita income (Figure 6).

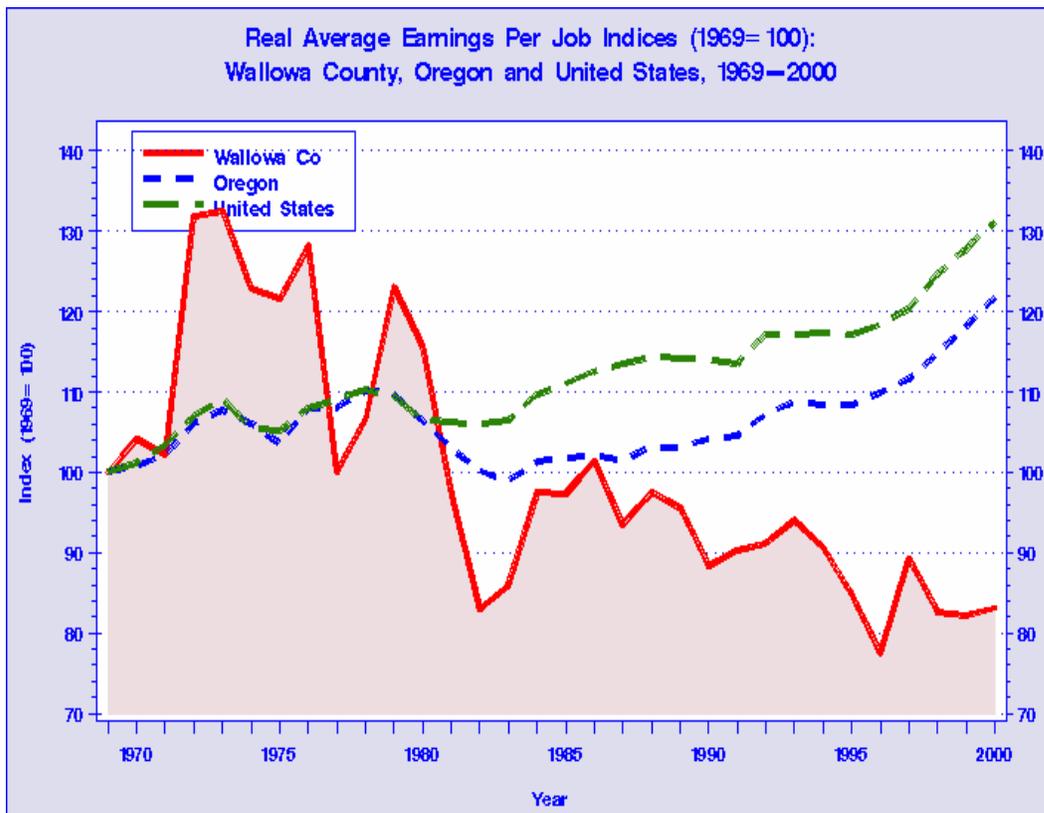
**Figure 6. Real Per Capita Income Indices (1969=100).  
Wallowa County, Oregon and United States 1969-99.**



Source: Smith, Gary W. 2003. Northwest Income Indicators Project (NIIP) Web Page. <http://niip.wsu.edu>.

From 1969-2000 Wallowa County's real per capita income has risen 57.3%, behind the State's growth of 87.1% and national increase of 90.6%. During the same time, Wallowa County's real average earnings per job have fallen by 16.9% while Oregon's real average real earnings per job have increased by 21.7% and the U.S. average real earnings per job also rose 31.1% (Figure 7).

**Figure 7. Real Average Earnings Per Job Indices (1969=100).  
Wallowa County, Oregon and United States, 1969-2000.**



Source: Smith, Gary W. 2003. Northwest Income Indicators Project (NIIP) Web Page. <http://niip.wsu.edu>.

## **Sectoral Employment and Location Quotients**

A closer examination and analysis of the proportions of employment in each sector in Wallowa County compared to the proportions of those sectors in Oregon and the U.S. can supplement the previous discussion of sectoral changes over time.

Location quotients (LQs) can be used to make comparisons among sectors within Wallowa County and to index those changes to a larger economy. LQs are calculated by taking the percentage of employment that a sector represents in Wallowa County and dividing it by the percentage of employment that sector represents in another economy. LQs indicate where Wallowa County is relatively more specialized than the other economy and where Wallowa County may be presumed to have a comparative advantage, or at least did at some time in the past, in relation to the other economy. If the percentages of employment for a sector are the same for Wallowa County and Oregon or the U.S., the location quotient will be 1.0. If Wallowa County is less specialized in a sector than Oregon or the U.S., the LQ will be less than 1.0 and if it is more specialized than Oregon, the LQ will be greater than 1.0.

"LQs can be used as an indicator of economic diversity; having several sectors with LQs greater than 1.0 indicates multiple specializations that are the key to economic diversity (Weber, Sorte and Holland, 2002)." "Location quotients are [also] quite useful as rough approximations of the local economic base (Maki and Lichty, 2000; 198)."

Wallowa County's LQs are shown in Table 2. From the LQs in Table 2, one can see that Wallowa County is still a natural resource based economy (Farm proprietors' - 6.74 and 9.45 and Farm employee employment - 4.95 and 8.17) far exceeding the Oregon and U.S. LQs or proportions of employment in those sectors. Agricultural service, Construction and Government employment also show greater proportions of employment than Oregon and the U.S.

Table 2. Wallowa County location quotients.

$$LQ=(\text{County}/\text{County})/(\text{Oregon}/\text{Oregon}) \text{ and } LQ=(\text{County}/\text{County})/(\text{US}/\text{US})$$

SECTOR	1970				2000			
	Jobs	%	ORLQ	USLQ	Jobs	%	ORLQ	USLQ
Total full-time and part-time employment	2,871	100.0	1.00	1.00	4,510	100.0	1.00	1.00
By type								
Wage and salary employment	1,651	57.5	0.69	0.67	2,535	56.2	0.70	0.67
Proprietors' employment	1,220	42.5	2.49	3.11	1,975	43.8	2.22	2.63
Farm proprietors' employment	662	23.1	6.70	7.75	563	12.5	6.74	9.45
Nonfarm proprietors' employment	558	19.4	1.42	1.82	1,412	31.3	1.75	2.04
By industry								
Farm employment	873	30.4	5.47	7.01	683	15.1	4.95	8.17
Nonfarm employment	1,998	69.6	0.74	0.73	3,827	84.9	0.88	0.86
Private employment	1,484	51.7	0.67	0.66	3,050	67.6	0.80	0.80
Ag. services, forestry, fishing, & other	52	1.8	1.95	3.15	190	4.2	2.00	3.26
Mining	18	0.6	3.23	0.77	0	0.0	0.00	0.00
Construction	115	4.0	0.90	0.83	307	6.8	1.17	1.19
Manufacturing	222	7.7	0.40	0.36	406	9.0	0.74	0.79
Transportation and public utilities	84	2.9	0.51	0.55	184	4.1	0.93	0.83
Wholesale trade	58	2.0	0.41	0.44	76	1.7	0.35	0.37
Retail trade	394	13.7	0.87	0.91	635	14.1	0.83	0.86
Finance, insurance, and real estate	147	5.1	0.69	0.76	269	6.0	0.76	0.74
Services	394	13.7	0.75	0.74	983	21.8	0.73	0.69
Government and government enterprises	514	17.9	1.04	1.02	777	17.2	1.36	1.27
Federal, civilian	100	3.5	1.26	1.10	143	3.2	2.16	1.84
Military	36	1.3	0.76	0.35	25	0.6	0.91	0.45
State and local	378	13.2	1.03	1.21	609	13.5	1.27	1.27

Source: U.S. Bureau of Economic Analysis 2003.

While LQs can provide some indication of the County's economic structure, "...location quotients are imperfect indicators of the economic base. The economic base of a region is better captured with an input-output model, which directly

estimates exports from each industry and, using multipliers for each sector, generates estimates of the dependence of a regional economy on exports from each sector (Cornelius et al., 2000; 14)."

## **Input/Output Modeling and Ground Truthing**

At the local level, thousands of decisions are made regularly by public officials and by businessmen [people]. In the aggregate, these decisions have a great impact on economic growth and the quality of living standards of the American people. Yet, such decisions are usually based on much less detailed economic information than is available at the national level. A regular flow of sound economic information about each local economy and its economic base would contribute to the quality of decisions made at the local level by public officials and business leaders. (Tiebout, 1962; 11-12)

Input-output analysis provides an effective way of organizing and using the detailed economic information, for which Tiebout was advocating. After the tables and matrices of an I-O model are constructed, an economic event can be introduced into the economy and a set of impacts projected.

Input-output analysis is a means of examining relationships within an economy both between businesses and between businesses and final consumers. It captures all monetary transactions for consumption in a given time period (Olson and Lindall 1999; 95)." An I-O model "...comprises many sets of figures of which the largest and in a sense the most important is organized in terms of a so-called input-output table. This table describes the actual flow of commodities and services among all the different parts of the American economy. Specifically, it shows how each one of our manufacturing industries, each branch of agriculture, each kind of transportation and distribution - in short, each sector of the American economy - depends upon every other sector. A single column of an input-output table shows, for example, how many steel...products automobile manufactures buy from the steel industry [as well all the products from other industries and labor from households, etc.]...Similarly, the "steel industry" column of the same table describes the various kinds of inputs, such as coal, ore, and so on, which the steel industry must obtain from other sectors of the economy...The table contains as many columns as there are

separate industries [528 in IMPLAN] so that it presents each link connecting any two sections of the economy (Leontief, 1986; 67).

When considering the estimates of impacts provided in this report, the reader needs to remember that an I-O model has limitations. It is dependent on its assumptions of how things are produced or their production functions, the price of inputs, and the percentage of purchases that are made within the study area. An I-O model is static and linear. It does not account for major changes in markets and technological conditions. It assumes that industries can and do continue to produce goods and services in the same manner without regard to how much they produce. Even with these limitations, I-O models can be very useful for estimating economic impacts and understanding how they ripple throughout an economy from the backward (supplier) and forward (customer) linkages among industries.

To develop a more detailed profile of the Wallowa County economy and conduct the economic impact analysis an input-output model of Wallowa County was constructed. The starting point for the model was purchasing a basic I-O model from the Minnesota Implan Group, Inc. (MIG). MIG incorporates more than thirty national and local databases into an I-O modeling structure that can create individual geographically specific I-O models. The software is called IMPLAN Professional and comes with a number of dataset options.

IMPLAN is an effective tool that is being used across the U.S. and is regularly being tested and improved. The data for the IMPLAN system is updated on a regular basis. It takes approximately three years to gather and incorporate the data from a number of sources into IMPLAN. This report used the 2000 IMPLAN database.

Once the IMPLAN out-of-the-box model was built it was customized or ground-truthed to provide a more accurate representation of the Wallowa County

economy. Through a number of steps other statewide and national data were compared to and used to guide changes to the IMPLAN out-of-the-box model.

Next, the authors and Lisa Dawson, Northeast Oregon Economic Development Department, visited businesses to discuss how they produced their goods and services, where they purchased their inputs, and where they sold their products. Then, the results of all the ground-truthing steps were combined in a single spreadsheet and the edits were finalized. Finally, the edits were applied to the IMPLAN out-of-the-box model and detailed (103 sector) and aggregated (24 sector) models were constructed.

When the I-O model was finished, a detailed economic profile of Wallowa County could be estimated. Wallowa County is about a \$265 million economy, as noted in Table 3. under "Output" in the row labeled "Total". Approximately half (\$148.511 million) of that output comes from value (employee compensation, proprietor income, other property income, and indirect business taxes) that is added within the County. The remainder (\$116.725 million) is from the intermediate goods and services that are purchased and used to produce the output. Wallowa County's LQs are calculated in Table 3. The sectoral break down in Table 3., is more detailed than the Standard Industrial Classification (SIC) one-digit level sectoral breakdowns that are used in Tables 1 & 2. The Table 3. categories are based on the North American Industrial Classification System (NAICS). The NAICS is replacing the SIC and its sectors are more representative of today's economy than those of the SIC. For comparison of prior periods, for which NAICS aggregations are not yet available, with current data (e.g. 1970-2000) in Tables 1. and 2., the SIC has been used. Current estimates and projections are based on the NAICS aggregation.

**Table 3. Wallowa County Industry Output, Employment and Value Added, 2000**

Sector	Industry Output*	Employment (Full & P-T)	Employee Comp*	Proprietor Inc*	Other Property Income*	Indirect Business Tax*	Total Value Added*
Agriculture, Fishing & Related	31.981	751	6.726	0.798	3.768	1.530	12.821
Mining	0.455	4	0.173	0.009	0.099	0.014	0.295
Construction	34.052	295	7.355	3.491	1.252	0.200	12.298
Manufacturing - Food, Beverages, Textiles & Relate	4.088	25	0.560	0.024	0.467	0.349	1.399
Forestry & Logging	14.969	133	2.632	2.098	4.453	0.669	9.852
Manufacturing - Wood Products, Paper, Furniture & Related	14.526	85	2.666	0.265	0.956	0.147	4.034
Manufacturing - High Tech. & Related	1.354	7	0.316	0.001	0.023	0.014	0.354
Manufacturing - Other	7.087	163	3.908	0.202	-1.700	0.081	2.491
Transportation & Warehousing	15.770	183	4.724	0.936	1.286	0.246	7.192
Utilities	7.701	37	1.276	0.217	2.297	0.498	4.288
Wholesale Trade	7.080	76	2.795	0.147	0.910	1.002	4.854
Retail Trade	16.576	484	7.009	1.265	2.514	2.588	13.376
Accomodation & Food Services	7.502	249	2.158	0.292	0.732	0.428	3.610
Finance & Insurance	25.886	180	5.556	0.597	10.568	0.487	17.208
Real Estate & Rental & Leasing	20.523	91	0.751	0.740	11.049	2.532	15.072
Other Services	10.143	202	2.164	0.698	0.346	0.119	3.328
Information	2.731	29	0.633	0.105	0.316	0.059	1.112
Administrative and Support Services, etc.	0.356	4	0.058	0.027	0.038	0.004	0.127
Arts, Entertainment & Recreation	2.341	92	0.780	0.189	0.352	0.128	1.449
Health Care and Social Assistance	14.502	253	7.998	0.707	0.582	0.108	9.395
Professional, Scientific, and Technical Services	2.049	62	0.453	0.945	0.091	0.016	1.505
Educational Services	7.499	191	7.103	0.010	0.007	0.005	7.125
Public Administration	16.063	392	12.550	0.000	3.005	0.000	15.555
<b>Total</b>	<b>265.236</b>	<b>3,987</b>	<b>80.343</b>	<b>13.762</b>	<b>43.412</b>	<b>11.223</b>	<b>148.740</b>

\*Millions of dollars

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Considering just the output information in Table 3, four industry groups or eight sectors produce almost 67% of the County's output as follows; 1) 30.3% - Housing (Construction, Finance & Insurance, and Real Estate & Rental & Leasing), 2) 13.6% - Agriculture (Agriculture, Fishing & Related and Manufacturing - Food, Beverages, Textiles & Related), 3) 11.1% - Timber (Forestry & Logging and Manufacturing - Wood Products, Paper, Furniture & Related), and 4) 8.6% - Trade (Wholesale Trade and Transportation & Warehousing).

Output is not the best measure for describing an economy or an economic impact. Output estimates often include significant double counting. As an example, when a rancher raises and sells calves, the sale of those calves is added to the Agricultural sector, however, if another rancher or feedlot buys the calves and feeds them in preparation for market the value of the calves, when sold, is once again added as a part of the sale price of the finished calves.

Value added is a better measure because it only includes the net additions to the output, which are provided within each production process. The four industry groups whose outputs were described above comprise 57.1% of the County's value added production; 1) 30.3% - Housing (Construction, Finance & Insurance, and Real Estate & Rental & Leasing), 2) 9.6% - Agriculture (Agriculture, Fishing & Related and Manufacturing - Food, Beverages, Textiles & Related), 3) 9.4% - Timber (Forestry & Logging and Manufacturing - Wood Products, Paper, Furniture & Related) and 4) 8.1% - Trade (Wholesale Trade and Transportation & Warehousing).

Employment is also a useful measure of economic activity and how changes impact an area. Employment has the added benefit that it does not need to be inflated or deflated to compare it across time periods. The way IMPLAN calculates employment is by using output per worker estimates from national surveys, which are sector specific, and dividing total industrial output by output per worker to approximate the number of jobs that were needed to produce a particular level of output. As mentioned previously, these are full and part-time jobs.

A rural community's economic resilience is often measured first in terms of jobs. Throughout the rest of the report, jobs are used as the primary impact variable in the analyses. As would be expected, there can be significant differences among sectors as to the value-added dollars per job (e.g. Agriculture, etc. -  $\$12.821\text{M}/751 = \$17,072$ , Manufacturing - Wood Products, etc. -  $\$4.034\text{M}/85 = \$47,459$ , and Wholesale Trade -  $\$13.376\text{M}/484 = \$27,636$ ). While the value-added or some component of value-added (e.g. employee compensation) per job calculation is easy to make, it is more difficult to estimate the social and personal nonmonetary benefits of just having any job, even without considering the salary level or qualitative features of each job. The utility of a job to an individual will then have pecuniary and nonmonetary components.

With the addition of the ground-truthed model information, the economic profile of Wallowa County is more precise as output, jobs, and value-added estimates have been added to the previous discussion of LQs. Calculating the export-base of the County's economy will round out the picture by explaining the "engines" or sectors that drive the economy.

## **Wallowa County's Export Base**

"Central to the study of regional economies is a region's economic base, commonly represented by its exports to markets outside the region (Maki and Lichty 2000; 15)." The term "exports" is used here to include any activities that bring dollars into the Wallowa County economy, which means items like tourism or federal transfer payments are considered part of the export base. (Weber et al. 2002; 9).

The Wallowa County input-output model does estimate exports from each industry and, using the multipliers for each sector, generates estimates of the dependence of a regional economy on exports from each sector. A sector's contribution to a regional economy is determined by the demand of for that sector's goods and services from outside the County and the subsequent responding associated with meeting that demand.

The contribution of that industry to the region's employment is the number of employees in industries whose jobs are dependent on producing the exported goods or services, which are the direct effects, industries that supply the exporting industry through interindustry linkages, which are the indirect effects, and through household spending of the income received from the exporting or supplying industries, which are the induced effects (Cornelius et al., 2000; 14) (Weber et al., 2002; 13).

Wallowa County's export base was calculated by removing the exports of each sector exports as a separate event within the IMPLAN I-O model to determine the direct, indirect and induced effects. The share of total jobs in the County that are dependent on each sector's exports is that sector's "dependency index".

However, by just removing the exports from the industrial sectors the resulting estimate of the number of jobs in the economy will be less than the total jobs in the economy. The key missing elements are federal and state transfer payments to households and exogenous household income (e.g. dividends and interest). Using a Social Accounting Matrix (SAM), "...an extension of traditional input-output accounts...[which includes]...information on non-market financial flows (Olsen and Lindall. 263)," these elements can be estimated and removed to determine the jobs within the County that rely on external payments to households. In Wallowa County those payments totaled \$69.7 million. They were 41% federal, 33% State, and 26% private. These dollar estimates were translated into jobs by removing 95%, assuming a five percent savings rate, of the payments or \$66.215 million in personal consumption expenditures (PCE) and again by dividing the dollar impact in each sector by the average output per worker in that sector, the jobs that are dependent on the payments to households were estimated.

Table 4. shows export dependency by sector and compares the sectoral employment with the export base dependent employment for each sector. As noted above, the export dependent jobs for each sector include all the jobs across all the sectors that are dependent on the particular sector's exported products.

An example is the Agriculture, Fishing & Related has 786 export dependent jobs. Included in the 786 jobs are 602 direct jobs in Agriculture, Fishing & Related, 91 indirect jobs in Wholesale Trade (as part of the 137 indirect jobs) and 7 in Health Care & Social Assistance (as part of the 47 induced jobs) and so on.

**Table 4. Wallowa County Sectoral and Export-Base Dependent Employment, 2000.**

Sector	Sectoral		Export-Dependent			Total Jobs	Index (%)
	Jobs	%	Direct	Indirect	Induced		
Agriculture, Fishing & Related	751	18.8	602	137	47	786	19.7
Forestry & Logging	133	3.3	109	20	27	155	3.9
Mining	4	0.1	4	0	2	6	0.1
Construction	295	7.4	238	82	64	384	9.6
Manufacturing - Food, Beverages, & Related	25	0.6	5	3	2	10	0.2
Manufacturing - Wood Products, Paper, Furniture & Related	85	2.1	74	56	25	156	3.9
Manufacturing - High Tech. & Related	7	0.2	1	0	0	1	0.0
Manufacturing - Other (e.g. Sheet Metal Products)	163	4.1	154	17	37	208	5.2
Transportation & Warehousing	183	4.6	84	26	18	127	3.2
Utilities	37	0.9	5	3	2	10	0.2
Wholesale Trade	76	1.9	12	2	3	16	0.4
Retail Trade	484	12.1	85	5	13	102	2.6
Accommodation & Food Services	249	6.2	52	5	4	61	1.5
Finance & Insurance	180	4.5	119	22	27	168	4.2
Real Estate & Rental & Leasing	91	2.3	50	15	20	85	2.1
Other Services	202	5.1	100	41	14	155	3.9
Information	29	0.7	7	2	1	9	0.2
Administrative and Support Services, etc.	4	0.1	0	0	0	1	0.0
Arts, Entertainment & Recreation	92	2.3	61	4	5	70	1.7
Health Care and Social Assistance	253	6.3	39	3	10	52	1.3
Professional, Scientific, and Technical Services	62	1.6	6	0	1	7	0.2
Educational Services	191	4.8	181	40	39	260	6.5
Public Administration	392	9.8	392	55	105	552	13.8
Households (e.g. Social Security)					608	608	15.2
<b>Total</b>	<b>3,987</b>	<b>100.0</b>	<b>2,378</b>	<b>537</b>	<b>1,072</b>	<b>3,987</b>	<b>100.0</b>

Reviewing this export dependency information, one can distinguish the major basic or exporting industries by watching for higher positive percentages in the last column. Sectors like Agriculture, Fishing & Related, Construction, Public Administration, and Households, which have export dependency indexes close to or above 10%, represent 58.3% of the County's export based employment. A feature of the I-O model is that it uses local production to satisfy local demand first. So, while the Forestry & Logging and the Manufacturing – Wood Products, Paper, Furniture & Related may actually export higher percentages of their production than the Model indicates, since there is a high demand for these goods within the County for manufacturing and construction the economic dependency may be understated. If the exports and economic dependency are understated there maybe much higher level of imports of these goods and the leakages from the County will be higher. This same logic explains why even though a higher percentage of the County is dependent on the tourism related sectors like Arts, Entertainment & Recreation, people within the County are leaving the County or "importing tourism", which moderates those sectors' economic dependency numbers.

The non-basic or service industries are those with no or lower positive percentages in the last column like the Health Care and Social Assistance sector, which has minimal export activity and needs  $253 - 39 = 214$  or 85% of its jobs to provide services to the people within the County. Still, those sectors are very important because the quality of services in those sectors can be critical to the recruitment, retention, and/or expansion of the export industries.

Though Wallowa County's dependence on natural resources for production purposes (e.g. timber for lumber mills) has declined over the last half century, it is still very dependent on natural resources. That dependency has in a sense diversified and intensified, depending on how broadly "natural resource based" is defined. This diversification and intensification is due to the expanding uses of natural resources as amenities as well as production inputs.

These amenity uses of natural resources range from short-term tourism activities to long-term construction activities that are driven by retirees locating in Wallowa County to enjoy its environment, as well as the social aspects of the community.

In addition to the initial impacts (e.g. construction) of retirees locating in Wallowa County, the retirees receive transfer payments from government and private retirement plans or investments, a portion of which they spend in Wallowa County.

Major portions of the jobs that are export dependent on Agriculture, Fishing & Related at 19.7%, Forestry & Logging at 3.9%, and Manufacturing - Wood Products, Paper, Furniture & Related at 3.9% are natural resource based production activities. Natural resource based amenity activities include portions of Construction (e.g. vacation and retirement residences) at 9.6% and Household (e.g. Social Security payments) at 15.2%.

Additionally, a portion of the community's dependence (13.8%) on the Public Administration sector may be natural resource based to both help manage the production (e.g. harvests from and restoration of public lands) and amenity (e.g. recreational activities on public lands/parks) uses of the natural resource. When a portions of Finance & Insurance, Real Estate & Rental & Leasing, and tourism related sectors are included, potentially three-quarters of the County's economy could be considered dependent on its stock of natural capital for either production or amenity purposes.

Most of nonmetro Oregon counties have similar export dependency profiles to Wallowa County's with three exceptions; 1) Wallowa County has remained more dependent on the agriculture than Nonmetro Oregon generally, 2) Public Administration is more important to Wallowa County than most of Nonmetro Oregon, and 3) Nonmetro Oregon generally is about 25% dependent on transfer payments and exogenous income to Households while Wallowa County is just over 15% dependent on transfer payments.

## **ANALYSIS**

### **Introduction**

Wallowa County's economy has been regularly shocked over the last three decades. One example, which is demonstrated by another mill closure, is the declining harvests in the timber industry in Oregon. There has been a dramatic reduction of the timber industry, which went from an annual average statewide harvest of 8,362,900,000 board feet during 1970-1980 to 4,815,666,000 board feet during 1990-1998 (Loy, 2001; 92). Due primarily to the policy changes of the early 1990's and technological advancements in forestry and wood products manufacturing "in the future most of Oregon's greatly reduced timber harvest, estimated at approximately 4 billion board feet per year, will come from private land in Western Oregon (Ibid)."

This transition away from timber will leave agriculture, construction, government and tourism as the major components of the County's export base. To demonstrate how the County's I-O model works and can be used to project economic impacts and how the timber industry may be at least partially revitalized , the contracts that the Forest Service awarded for work in Wallowa County for 1999, 2000 and 2001 have been applied through the model.

### **Economic Impact Scenario**

#### **Scenario: Forest Service Contract Spending**

This section considers the impacts of contracts awarded by the U.S. Forest Service for services within Wallowa County. It separates the contracts and impacts between Wallowa County resident contractors and non-resident contractors. Information was available to categorize most of the contractors between resident and non-resident contractors.

When place of business information could not be found for a contractor, the contractor was classified as non-resident. This approach may not be correct for some of the contractors, yet, a number of information sources including phone books were checked so incorrect assignments should be small and this seemed like the most conservative approach.

One component of the Wallowa County I-O Model (Model) is an industry balance sheet for each industry or sector. An industry balance sheet shows what is produced in each sector and the inputs, including supplies, services, employee compensation and proprietor income, that it takes to produce the goods or services for the particular industry. These balance sheets were used to estimate the local impact of the resident contractors. For the contracts that were awarded to non-resident contractors the expenditures from the industry balance sheets that are operational and necessary during the performance of the contract (e.g. fuel and accommodations) were kept the same as the resident contractors, however, expenditures that would not be likely to be spent in Wallowa County (e.g. equipment and the major portion of employees' salaries) were not counted as local expenditures. In Table 5. the amounts of the subcontract awards are summarized within the appropriate sectors of the Model. As the table indicates, approximately three-quarters of the contract expenditures were to non-resident contractors.

**Table 5. U.S. Forest Service Contracts within Wallowa County 1999 to 2001.**

Year and Sector	Resident Contractors		Nonresident Contractors		Total (\$)
	(\$)	% of Total	(\$)	% of Total	
<i>1999</i>					
Agriculture, Forestry, Fishery Services			40,711	100	40,711
New Government Facilities	45,784	13	306,820	87	352,604
Engineering, Architectural Services	4,738	100			4,738
<b>Subtotal</b>	<b>50,522</b>	<b>13</b>	<b>347,531</b>	<b>87</b>	<b>398,053</b>
<i>2000</i>					
Agriculture, Forestry, Fishery Services	65,687	31	147,031	69	212,718
New Highways and Streets			3,270	100	3,270
New Government Facilities	169,786	68	80,785	32	250,571
Engineering, Architectural Services			14,552	100	14,552
<b>Subtotal</b>	<b>235,473</b>	<b>49</b>	<b>245,638</b>	<b>51</b>	<b>481,111</b>
<i>2001</i>					
Agriculture, Forestry, Fishery Services	181,355	12	1,381,682	88	1,563,037
New Highways and Streets	103,116	39	163,721	61	266,837
New Government Facilities	340,651	74	118,549	26	459,200
Building Materials and Gardening			307,619	100	307,619
Engineering, Architectural Services			271,480	100	271,480
<b>Subtotal</b>	<b>625,122</b>	<b>22</b>	<b>2,243,051</b>	<b>78</b>	<b>2,868,173</b>
<b>Three Year Total</b>	<b>911,117</b>	<b>24</b>	<b>2,836,220</b>	<b>76</b>	<b>3,747,337</b>

Using the I-O model, the value-added direct, indirect and induced effects of the two types of contracts are summarized in Table 6. It is not surprising to see that while more than three-quarters of the contract expenditures went to non-resident contractor, more than half of the value-added impacts came from resident contractors.

**Table 6. Value-Added Direct, Indirect and Induced Effects of Forest Service Contracting in Wallowa County from 1999 to 2001.**

Year	<i>Resident Contractors</i>					<i>Nonresident Contractors</i>				
	Direct (\$)	Indirect (\$)	Induced (\$)	Total (\$)	% of Wallowa Total	Direct (\$)	Indirect (\$)	Induced (\$)	Total (\$)	% of Wallowa Total
1999	22,633	3,702	5,702	32,037	38	39,725	6,306	7,010	53,041	62
2000	109,782	17,703	25,779	153,264	79	30,667	4,383	5,491	40,541	21
2001	286,497	45,628	67,046	399,171	54	255,731	34,700	45,688	336,119	46

The employment direct, indirect and induced effects of the two types of contracts are summarized in Table 7. Again as one may expect the contracts awarded to resident contractors have a greater per dollar employment impact than contracts awarded to nonresident contractors.

**Table 7. Employment Direct, Indirect and Induced Effects of Forest Service Contracting in Wallowa County from 1999 to 2001.**

Year	<i>Resident Contractors Full &amp; Part-Time Jobs</i>					<i>Nonresident Contractors Full &amp; Part-Time Jobs</i>				
	Direct	Indirect	Induced	Total	% of Wallowa Total	Direct	Indirect	Induced	Total	% of Wallowa Total
1999	1	1	1	3	43	2	1	1	4	57
2000	4	1	1	6	60	2	1	1	4	40
2001	9	2	2	13	50	10	1	2	13	50

## CONSIDERATIONS

The Wallowa County Economic Model, which has been described and demonstrated in this report, can be a useful tool as the community addresses economic shocks and develops strategic plans. The benefits of using an I-O model are not to be found in the detailed estimates that it produces for individual sectors. They are in recognizing and exploring the interdependencies among sectors and comparing the options based on the direction and strength of their outcomes. Using an I-O model to estimate the impacts of different types of response scenarios can give a false impression of precision and objectivity. Still, studying resilience and estimating economic impacts using an I-O model with actual or simulated events can inform policy decisions by indicating the economic direction and magnitude of impact that may result from policy options.

Wallowa County and other nonmetropolitan communities are still more remote, smaller, and have less diverse economies than metropolitan areas; yet, they must survive in the same global market with metropolitan areas that enjoy the benefits of increasing returns to scale and agglomeration economies.

Nonmetropolitan communities do have significant and maybe sufficient stocks of human, natural, human-produced and social capitals to survive and even thrive in a global economy.

However, it is difficult to find that the current efforts, as diverse and energetic as they have been, will reverse the current economic distress in Wallowa County. As can be seen through the Forest Service contracts example, without proactive policies that encourage local economic development, current economic trends may continue and become more severe.

In relation to the Forest Service contracts, the Forest Service has significant requirements that constrain the extent to which they can award their contracts for reasons that extend beyond the basic scope of work. In the past, local, state, and federal government agencies found that preferential evaluation processes that directed funding to local contractors often prompted reciprocal preferential processes in other jurisdictions. So, most contracting rules now limit those types of preferences unless specifically directed by the enabling legislation. Still, requests for proposals can be rigorous in terms of on-site project management, frequent monitoring of the work progress, completion dates and response times when problems arise, which will tend to encourage resident contractors awards or non-resident contractors their on-site activities and so their local spending.

There may also be options available for Wallowa County to increase its economic resilience that can be more self-initiated and managed. Certainly, the County already has a number of these initiatives or projects in progress and they should be credited with mitigating the impacts of the economic shocks and trends over the last 25 years. Still, more bold action that is taken in the near-term may be critical to avoid declines in population, per capita income and average earnings per job. In addition, now is the time to prepare for the economic shocks that may be facing Wallowa County as the baby boomers age and become less mobile. In addition, the next generation may have lower real wages and less stable work schedules thereby limiting the time they have to travel to Wallowa County and the discretionary resources they have to spend, if they make the trip.

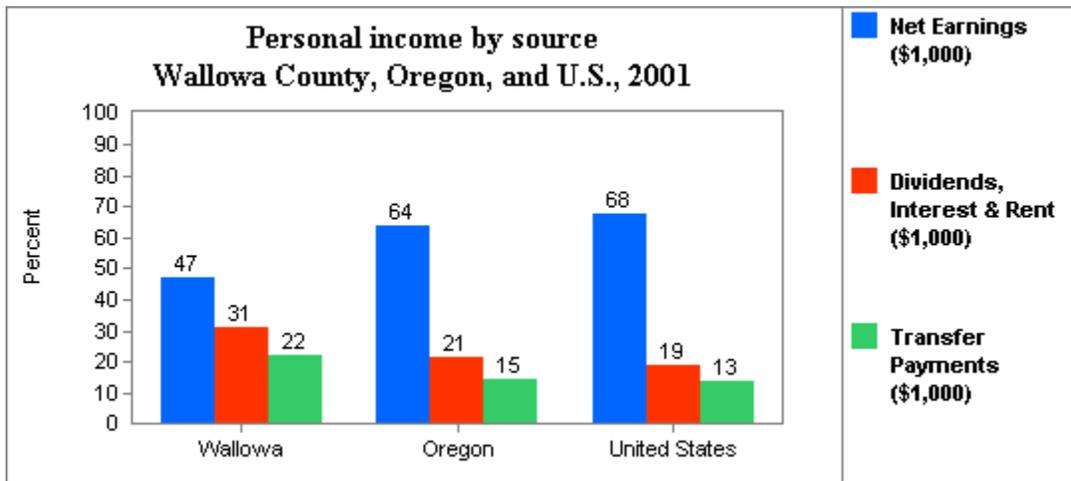
Wallowa County needs to recruit retirees, families with children, small business entrepreneurs, and encourage local purchasing and processing by existing businesses that could potentially have high multipliers, which is called import substitution. This may require some very innovative tax policies. There are too many amenity rich and friendly communities that are more accessible than Wallowa County to base the initiatives on just a marketing approach or publicizing the attributes of the County and hoping people will come. As an example, Wallowa County may have maximized its returns from community events designed to increase tourism. The tourism industry is vulnerable as the baby boomers age. There may be some opportunities to schedule and organize events so visitors come more frequently and stay longer, hopefully becoming comfortable enough to consider moving to the County.

There may be public policies at all levels of government which could be very helpful. What follows are a number of ideas, most of which have not been tried or tried with varying degrees of success. They should be read from a skeptical perspective and used as prompts from which a short list could be developed for a great deal more research and possible pilot-testing.

A number of federal 21<sup>st</sup> Century Homestead Acts have been considered at the federal level and regular efforts that expect the Oregon congressional delegation to become very active moving that type of legislation forward could be raised in every visit by a representative or senator. Oregon could be considering its own homestead act for at least remote rural counties and the new Office of Rural Policy may be able to help form legislation for the 2005 Legislative Session. The County must also stay aware of tax changes that could have significant negative impacts on the County (e.g. removing the second home credit) as the State searches for ways to address its budget shortfalls.

As Figure 7. shows, more than half of the income in Wallowa County comes from transfer payments. Please note that this report includes dividends, interest, and rents as part of transfer payments. The Northwest Area Foundation separates them from transfer payments like Social Security.

Figure 8. Personal Income by Source for Wallowa County, Oregon and U.S. in 2001.



Source: Northwest Area Foundation 2004.

A large portion of these transfer payments are received by retirees. Retirees, at least for the next twenty years, represent an opportunity for growth in Wallowa County, if they can be recruited, retained, and convinced to spend more of their income within the County. While more than half of the County's income is derived from transfer payments, the County's economy is approximately 15.2% dependent on transfer payments to households, see Table 4. Many expenditures by all the Wallowa residents leak out of the economy, however, retirees, who consume legal, financial planning, health care, and other high value services may spend lower percentages of their incomes within the County than other residents. There are a number of ways to "capture" a higher percentage of these expenditures, although the public and private policies need to be strategic (e.g. providing or increasing health care services that can truly be competitive). Access to Wallowa County may become an increasing issue for retirees whose primary residence is in the County and they wish to travel outside the County or encourage friends and relatives to visit. For people who have second homes in Wallowa County or live in the County part of the year access may become a concern, as they age. Local and State transportation policies can strongly affect that accessibility like reinstating the Pioneer Amtrak route and linking it to bus/train transportation to Wallowa County.

Recruiting younger families with children can have an even greater impact on the economy since they often have children, utilize a broader range of services, wear out durable goods more quickly, and due to the education funding system in Oregon, can contribute immediately to school district income. While for many families the County has a distinct advantage in terms of natural and social environment, it is unlikely that Wallowa County will be able to compete in terms of earnings per job with urban counties. It may be able to further reduce the costs of living for families thereby making making the same nominal income greater in terms of real purchasing power. An example is health care, which is becoming a progressively greater concern for families. If Wallowa County developed its own health care program that like an ambulance service allowed families to subscribe to obtain a modest level of health care, it could capitalize on rural people's basic pragmatism in terms of their demand for health care and possibly recruit families who would highly value the certainty of a modest level of health care. Very few developed countries have per person medical costs similar to the U.S. so people may be able to adjust their expectations in terms of the range of necessary health care services to obtain affordable health care. A number of lessons have been learned through the HMO experience, which may allow Wallowa County to provide a practical health care alternative and find a comparative advantage as health care costs increase. Also, people are returning to doing a number of services or processing food and other goods for themselves. Social scientists often use the term self-provisioning to describe these activities, which are still prevalent in rural communities, though not as much as in the past and much less so for families from urban areas. Building community kitchens or providing access to school kitchens is an example of how self-provisioning and even small businesses can be encouraged. Extension Service and other workshops on topics like home repair or construction and basic auto maintenance can help those families stretch their income.

Returning to the homestead act discussion above, Wallowa County could adapt an industrial recruitment technique to form its own homestead act of sorts by not charging property taxes to families who relocate to Wallowa County for five years or for as long as they have school age children, whichever is longer. Many counties have also effectively recruited families by developing guaranteed scholarship funds for higher education.

A number of types of high value services are not place dependent and Wallowa County has a better understanding of many of these services and the type of people who provide them than most counties. Wallowa County has done a great deal of work surveying “lone eagles” and could utilize more incentives to recruit them. The County may also want to hire lone eagles as recruiters, possibly on a commission basis.

Construction is a very important sector for Wallowa County and may become increasingly so for at least the next decade. Still, there is significant potential to increase the multiplier of that industry by increasing its use of locally produced construction materials and services. The local mill produces lumber that could be used for construction and yet it exports it to distant markets, while local building is often done with Canadian lumber. Financing for retirees’ and people’s second homes is often obtained outside Wallowa County because the owners assets that are used to secure the loans are often located outside the County. Building inspection is provided out of Pendleton. While the building inspection provide out of Pendleton is responsive and well respected, contracting for a local inspector to be on call for a fee, which many owners or builders may gladly pay, could be an effective way to increase the efficiency or lower the costs to local contractors of construction delays. Some type of property tax credit or free installation of public services for homes built with some percentage of Wallowa products may increase the Construction and related sectors’ multipliers.

Many people are already working very hard to develop a serious statewide effort to create environmental and land use policies that are geographically specific and that optimize both environmental and economic objectives. State agencies are reluctant to take significant roles that move beyond facilitating process to negotiating solutions. That needs to end and one or more agencies need to put themselves on the line to quickly find and implement the compromise solutions. It is hard to spend too much money lobbying on behalf of this issue. State leaders need to be visited and revisited until they truly engage in these issues for the long haul. They need to be accountable for measurable outcomes in terms of dollars and fish rather than workshop participants. The I-O model developed for this report can be used to show the impacts of various outcome based scenarios. To do so, the scenarios become very important and their credibility rests on the diverse values held by the group creating or projecting the scenarios.

In addition, one or two people might be designated within the County as government entrepreneurs or expeditors. They would learn enough about the policies of other government jurisdictions to quickly recognize where the leverage is when a Wallowa County business is required to comply with regulations that are design for entities of much greater scale or regulations that have been arbitrarily applied and severely limit the Wallowa County businesses opportunities to compete for government contracts to provide services locally or be competitive in the market place. Currently, elected officials must work their way through the many layers of State and federal government to address these issues. It is not reasonable to expect elected officials to have enough time to pursue the extensive number of regulations that affect local businesses on a daily basis. Often within counties there are experienced government or nonprofit employees who could accept the responsibility to tenaciously follow through and gain modifications to regulations that recognize the specific situations in Wallowa County without sacrificing the basic purpose of the regulations.

Finally, when economic development dollars are awarded with the County as seed funds to support new businesses or non-profits, the awarding agency should consider requiring the awardee to partner with an already successful business or

nonprofit within the County and make some of the funds available to the successful business or nonprofit. Good ideas are numerous, however, implementing them requires knowledge and experience that may be lacking. As difficult as it is for governmental agencies to allocate funds to already successful businesses, it is hard to spend funds more wisely than by engaging an already successful entrepreneur to help an energetic though inexperienced entrepreneur. The awarding agency should consider the portion that goes to the successful business as an educational expense.

The purpose of these suggestions has not been to prescribe a number of high risk actions. It has been to suggest public and private approaches that could be pilot-tested and may reverse a number of the serious economic trends and provide opportunities to strengthen the very interesting and productive communities in Wallowa County.

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