

Middle Fork John Day River Intensively Monitored Watershed Socio-Economic Indicators Follow-Up Study

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INSTITUTE FOR A SUSTAINABLE ENVIRONMENT



UNIVERSITY OF OREGON

MIDDLE FORK JOHN DAY RIVER INTENSIVELY MONITORED WATERSHED SOCIO-ECONOMIC INDICATORS FOLLOW-UP STUDY

ACKNOWLEDGEMENTS

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The members of the Expert Advisory Council created specifically for this project helped us immeasurably to understand the ecological and socio-economic realities of Grant County overall and of the upper Middle Fork John Day River in particular. They are: Sally Bartlett, Grant County Economic Development Coordinator; Amy Charette, John Day Watershed Restoration Coordinator, Confederated Tribes of Warm Springs; Elaine Eisenbraun, Executive Director, North Fork John Day River Watershed Council; Jason Kehrberg, Grant County Soil and Water Conservation District; Mark Webb, Executive Director, Blue Mountains Forest Partnership; and King Williams, Iron Triangle Logging, John Day.

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ABOUT THE AUTHORS

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BACKGROUND

There has been substantial investment over the past ten years in efforts to recover salmon and steelhead populations throughout the Pacific Northwest. Restoration projects aimed at improving salmon and steelhead habitat and increasing water quality and quantity are a major part of that effort. There is significant interest in understanding the effects of restoration activities. To help do so, sixteen intensively monitored watersheds (IMWs) have been established across Oregon and Washington (<https://www.pnamp.org/project/3133>), to track relevant restoration outcomes. Nearly all IMW monitoring is bio-physical (e.g., stream water temperature, fish populations, groundwater levels). However, the Middle Fork John Day River IMW monitoring project (MFIMW) includes a socio-economic element as well, monitoring the contribution of restoration projects in the MFIMW to the socio-economic health of the local community, what is often called the restoration economy.

Earlier studies commissioned by the Oregon Watershed Enhancement Board (OWEB) developed and field-tested a set of socio-economic measures for the MFIMW (Hibbard and Lurie 2012). The present study updates and applies the measures previously developed: we collected and analyzed data to assess changes in indicators of community socio-economic well-being and to estimate the socioeconomic contribution of IMW restoration work to the local community.

COMMUNITY INDICATORS

To fully understand the local restoration economy, it is helpful to put it into context. To do so, we developed a set of indicators of the overall socio-economic well-being of the local community, which we define as Grant County because the MFIMW is totally contained within the county and most available data on socio-economic health are collected at the county level. We depended on existing data for the indicators because it would be both technically difficult and cost-prohibitive to collect original data.

In the mid-1980s and again in the last half of the 1990s the overall population of Grant County exceeded 8,000, but it has trended downward over the last fifteen years and is now a little above 7,000. This parallels the trend in rural eastern Oregon overall. The non-metropolitan eastern Oregon share of the state's population has declined from more than eleven percent in 1980 to less than nine percent in recent years.

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As well, the population is aging. The fraction aged 65 and over increased from 16.8% in 1980 to 28.2% in 2015. And school enrollments have declined across the county, from 1,461 in 2000 to 900 in 2016.

The decline and aging of the population are counterbalanced by a recent small upturn in employment. The number of jobs in Grant County bottomed out in 2012 at 3,617; by 2015 (the most recent year for which data are available) the job count was up to 3,718. Similarly, the job ratio (employment/population) has inched up, from 0.49 in 2012 to 0.52 in 2015.

Incomes are also moving up in Grant County compared to state and national incomes, although they are still relatively low. From 1990 to 2010 average earnings per employed person in Grant County were less than 70% of Oregon as a whole and less than 60% of the U.S. average. By 2015 they were almost 79% of the state average and over 70% of the U.S. average. For comparison, in 2015 eastern Oregon non-metro average earnings were 81.9% of Oregon as a whole. Similarly, per capita incomes in Grant County bottomed out in the early years of the new century but have now returned to near 1980-85 levels. In 2015 they were almost 90% of that of Oregon as a whole and slightly over 80% of the U.S. average.

The aging of the population is reflected in changes in the sources of personal income – earned income, property income, and transfer payments. Earned income is defined as compensation for labor services, wages and salaries paid for work. Property income represents payments in the form of dividends, interest and rent for the services of capital owned by persons. Transfer payments are payments that are not related to the provision of services. The most important are social security and disability payments. The next largest category is medical payments, programs such as Medicare and Medicaid. Transfer payments, which accrue primarily to the elderly, have more than doubled in Grant County, from about 12% of all personal income in 1980 to over 25% in 2015. Over the same period, as the fraction of the population that is working age declined, earned income also declined, from two-thirds of all personal income in 1980 to less than half in 2015. Property income has held steady at 20-25% over that time.

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Housing data provide valuable insights into socio-economic conditions. First, Grant County households are quite stable: 94% of those who lived in Grant County in 2015 had lived there the year before. And housing costs are generally modest, though housing has gotten more expensive in the last five years, especially for renters.

These indicators paint a socio-economic picture of Grant County over the past 40-50 years in which there was a gradual decline, corresponding with the trend for rural eastern Oregon as a whole. However, things have stabilized and even moved up in some ways in recent years. Jobs and earnings are both up and transfer payments to the growing elderly population have also contributed to socio-economic stability. The data on housing stability and costs support this conclusion.

SOCIOECONOMIC OUTCOMES FROM THE MFIMW

In this section we estimate the contributions of the restoration economy to Grant County, using four measures to assess the socio-economic effects of MFIMW restoration and monitoring activities:

- the change in the number of restoration-related planning, management, and monitoring jobs in Grant County;
- the economic output effects of OWEB capacity grants to organizations in Grant County
- the employment and economic output effects of OWEB funded restoration projects in the MFIMW; and;
- the employment and economic output effects of all restoration projects specifically in the MFIMW area.

RESTORATION-RELATED PLANNING, MANAGEMENT, AND MONITORING JOBS

The coming of the MFIMW was part of the overall growth in restoration capacity in Grant County. The increase in the number of restoration organizations and collaboration among them led to a proliferation in restoration jobs around Grant County. Based on interviews with key personnel in relevant organizations we found that restoration-related planning, management, and monitoring jobs nearly doubled in Grant County between 2000 and 2016, from 52 (46.55 FTE) to 97 (83.5 FTE). And this count does not include contract workers or paid jobs that function as internships or other learning opportunities because we were not able to assemble comprehensive data on such positions.

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OWEB CAPACITY GRANTS

OWEB provides “capacity grants” – basic operating funds – to watershed councils and soil and water conservation districts around the state. Hibbard and Lurie (2006) calculated a multiplier of 5.09 for OWEB capacity grants. Every OWEB capacity grant dollar generates an additional \$5.09 for the local community.

Relevant to the MFIMW, from 7/1/07 to 6/30/17, the NFJDWC received \$521,575 in capacity grants and the Grant County SWCD \$755,575, for a total of \$1,277,150. Applying the multiplier, these capacity grants added about \$6.5m to the local economy.

ESTIMATING THE EMPLOYMENT AND ECONOMIC OUTPUT EFFECTS OF RESTORATION PROJECTS

The effects on employment and economic output are two basic measures of the effects of restoration projects on community socio-economic health. Given the scarcity of socio-economic data at the level of the MFIMW, we began by collecting data from the OWEB files on grants awarded for projects in the IMW area during the period of interest (7/1/07-6/30/17). We then extrapolated from the OWEB projects to produce estimates of the overall effects on employment and economic output to all projects in the MFIMW area, using multipliers¹ from Neilsen-Pincus and Moseley (2013).

It is important to keep in mind that we are looking only at the limited geographic area of the MFIMW. Much additional restoration work was performed across the John Day basin in Grant County between 2007 and 2017. This study does not reflect the socio-economic impacts of those investments.

OWEB made 21 grants for MFIMW restoration projects in the period of interest, most in partnership with other funders. We were able to obtain detailed data on 19 of those grants, which provided a total of \$2,644,919.

- The 19 grants for which we have data led to 33 contracts for restoration work. Of these, 23 (70%) were with Grant county organizations; 18 of the 23 (78%) were private firms. As well, over half the dollar value of the contracts (54%) was with Grant County organizations. That figure would be 65.9% except for one very large contract with an out-of-county non-profit organization.
- The 19 OWEB grants also entailed the purchase of materials and supplies. Forty percent (10/24) of the vendors were located in Grant County and 45% of the dollar value of the purchases was with them.

1. *A multiplier is the factor by which gains in total output are greater than the change in spending that caused it.*

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- Of the \$2,644,919, 93% (\$2,459,775) was expended directly on restoration activities and 7% (\$185,144) was used for project management, fiscal administration, and post-implementation work.
- The overall project costs of the OWEB grants in the MFIMW area, including cash and in-kind match contributions was \$10,264,574. Applying the 65.9% of contracting dollars spent in Grant County, we calculate a direct economic effect of approximately \$6,764,354 in Grant County – \$6.8M in round numbers – from the OWEB grants.

Applying the Nielsen-Pincus and Moseley multipliers, we estimate that in the ten years of the MFIMW the \$6.8M in restoration activities related to the OWEB grants produced an estimated 111 jobs.

Further, Nielsen-Pincus and Moseley enable us to estimate that over the ten years of the MFIMW, the \$6.8M in restoration activities related to the OWEB grants produced additional economic activity in the range of \$12.9 to \$16.3M.

In summary, a majority of the expenditures from OWEB grants to support MFIMW restoration work went to Grant County contractors and suppliers. Those expenditures rippled through the economy to produce more than 100 jobs and \$12-16M in economic output.

During the period of interest a total of 100 restoration projects were carried out in the MFIMW area, including the 21 OWEB-funded projects. Detailed financial data are not available for any of the non-OWEB grants that supported these projects. As well, the reported project costs are much lower than for the OWEB projects, and what is included varies from project to project. For example, in-kind match is included in some reports but not in others. Also, data are missing for 20 of the 100 MFIMW projects. Thus, our estimates of the socio-economic effects of all MFIMW projects are systematically low, and are not as precise as for OWEB-funded projects only. With those limitations in mind, we approximated the employment and economic output effects of all MFIMW restoration projects as follows.

The total cost of the 80 projects for which we have data was \$15,600,126, \$15.6M in round numbers. We would expect this to be much larger. It is only about 40% more than we found for the 19 OWEB-funded projects, even though it includes four times as many projects (19 vs. 40). Thus, the following analysis is probably very low.

- Applying the 65.9% of contracting dollars spent in Grant County (calculated from the OWEB data) to the estimated overall project cost of \$15.6M, we estimate a direct economic effect to Grant County from the MFIMW projects of at least \$10,280,400 – \$10.3M in round numbers.

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- Using the Nielsen-Pincus and Moseley multiplier, we estimate that MFIMW projects produced at least 168 jobs.
- Using the Nielsen-Pincus and Moseley multiplier, we estimate that MFIMW restoration activities produced additional economic activity in the range of at least \$19.6 to \$24.8M.

LESSONS LEARNED

Outcomes

MFIMW projects are making a significant contribution in jobs and dollars to Grant County. While it is methodologically impossible to demonstrate a direct a cause-and-effect relationship, the restoration economy has almost certainly contributed to the increase in jobs and earnings and thus to the socio-economic stabilization of Grant County.

Exportability

This project reinforces the guiding principles for monitoring the community socio-economic effects of ecosystem restoration discussed above. The measures are context-specific. Both the indicators and outcome measures were developed in consultation with local officials and residents, to gauge metrics that are important to them. The measures can be used to inform the general public about the socio-economic contribution of restoration efforts and as an input to public decision making and action. They also make it possible to consider the effect on the local economy as private landowners contemplate decisions about whether or not to engage in restoration work on their property. Thus, though the measures are not generalizable to other restoration efforts, the process of developing and applying measures is exportable and this project contributes to the small but growing body of literature that is seeking to develop a framework for socio-economic monitoring of restoration efforts.

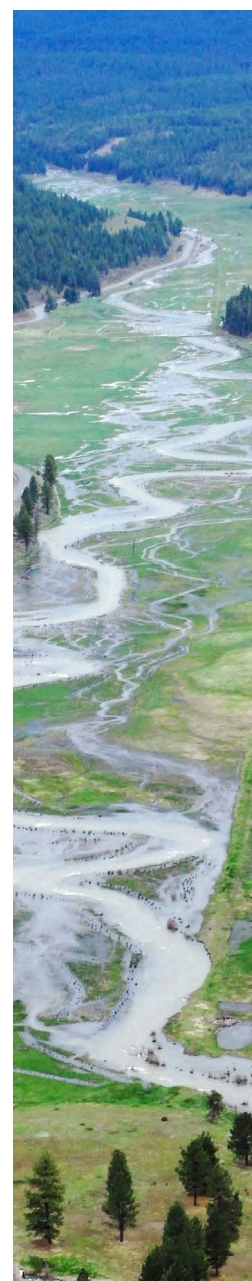




INTRODUCTION

There has been substantial investment over the past ten years in efforts to recover salmon and steelhead populations throughout the Pacific Northwest. Restoration projects aimed at improving salmon and steelhead habitat and increasing water quality and quantity are a major part of that effort. There is significant interest in understanding the effects of restoration activities. To help do so, sixteen intensively monitored watersheds (IMWs) have been established across Oregon and Washington (<https://www.pnamp.org/project/3133>), to track relevant restoration outcomes. Nearly all IMW monitoring is bio-physical (e.g., stream water temperature, fish populations, groundwater levels). However, the Middle Fork John Day River IMW monitoring project (MFIMW) includes a socio-economic element as well, monitoring the contribution of restoration projects in the IMW to the socio-economic health of the local community. An earlier study (Hibbard and Lurie 2012) commissioned by the Oregon Watershed Enhancement Board (OWEB) developed a set of socio-economic measures for the MFIMW. The present study updates and applies the measures previously developed. 1) We collected and analyzed secondary data to develop a set of **community indicators** in order to assess changes in the socio-economic well-being of the local community, which we define as Grant County because most available data on socio-economic health are collected at the county level. 2) We collected original data that allow us to estimate the socioeconomic **outcomes** of MFIMW restoration projects, their contribution to the local economy.

Following this Introduction, the report consists of: a brief background discussion on the significance and use of socio-economic measures in ecological restoration and preservation; an examination of recent trends in the socio-economic health of Grant County, using a set of community indicators; a description and analysis of the socio-economic outcomes of the restoration projects on the MFIMW, including a discussion of how the outcome measures were derived and their implications for the local community; and a discussion about the lessons learned from the MFJDR IMW about restoration and socioeconomic monitoring.



BACKGROUND

Arguably, one of the most significant developments in natural resource planning and management in the past twenty years has been the emergence of the restoration economy – also referred to as conservation-based development, sustainable livelihood, and the conservation economy, among other terms. As ecological preservation and restoration activities have become more and more important, their potential as a source of local job and wealth creation in rural communities has been recognized (Hibbard and Karle 2002). While the central focus of ecological restoration is healthy, functioning ecosystems, the restoration economy explicitly considers the local economy and community as well. It holds that “ecological integrity, economic opportunity, and community are inextricably linked in the long run” (von Hagen and Fight 1999, 3).

Oregon has been in the vanguard in that effort, through the work of OWEB. It is clear that the central purpose of OWEB is to support environmental restoration and management. At the same time, however, Oregon law (ORS 541.353) declares that “the long-term protection of the water resources of this state, including sustainable watershed functions, is an essential component of Oregon’s environmental *and economic* stability and growth” (emphasis added). Moreover, the restoration economy is explicitly acknowledged in OWEB’s mission statement: to “help protect and restore healthy watersheds and natural habitats that support thriving communities and strong economies” http://www.oregon.gov/OWEB/pages/about_us.aspx.

Overall, the socioeconomic contributions of ecological restoration have been insufficiently examined; the restoration economy is more assumed than empirically studied. There is no generally agreed-on set of metrics by which to measure the restoration economy, so there has been no systematic data collection (BenDor et al. 2017, Neilsen-Pincus and Moseley 2013, Aronson et al. 2010). However, OWEB, one of the more forward-thinking organizations involved in restoration, has been concerned with the local socio-economic impact of restoration projects from the beginning of the MFJD IMW.

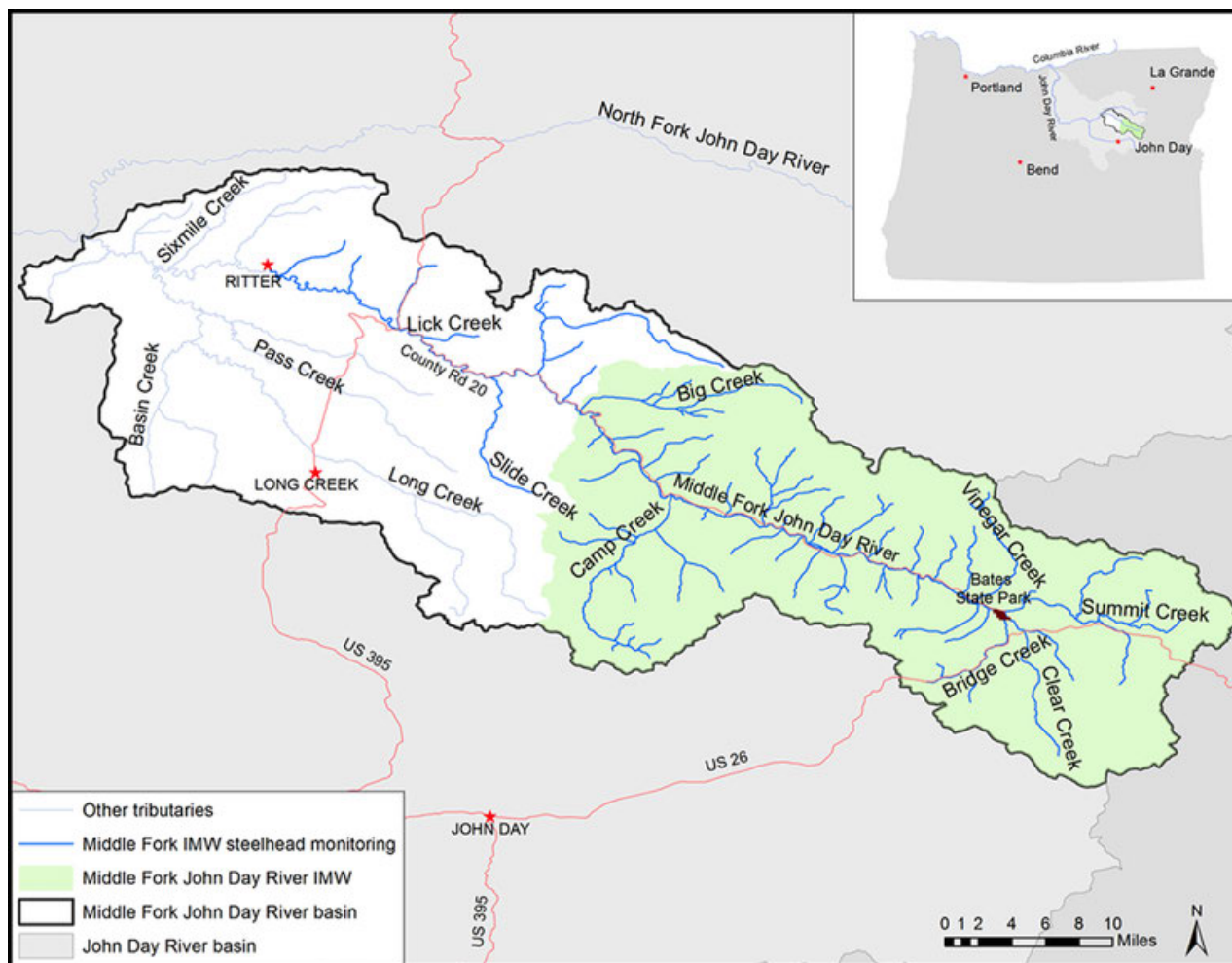
They commissioned a preliminary study to develop socio-economic measures of the impact of the MFIMW and subsequently supported an initial effort to collect data on the measures (Hibbard and Lurie 2012, Hibbard et al. 2015). Those studies distilled three guiding principles for monitoring the community socio-economic effects of ecosystem restoration:

- The measures should be context-specific – transparent and embedded in the local culture and knowledge.
- Both experts (including agency officials, scientists, and academics) and local residents should be involved in developing the measures.
- The measures should be useful for policymaking, management of the IMW, and public education/citizen action.

More recent work (e.g., BenDor et al. 2015, Neilsen-Pincus and Moseley 2013) reinforces those principles and advocates for two types of socio-economic measures to fully understand the local restoration economy. This is consistent with the approach proposed in the preliminary study for the restoration economy of Grant County:

- A set of **community indicators** that assesses the overall socio-economic well-being of Grant County over time and put the restoration economy into context. These are existing measures – data collected for other purposes – that are sensitive to the effects of restoration work.
- A set of **outcome measures** that estimates the contribution of IMW restoration work to the local (Grant County) economy, based on an inventory and analysis of completed projects.

The current study builds on the preliminary study. We reviewed and modified the measures previously developed, with counsel from two sources. One is an ad hoc expert advisory committee formed specifically for this project. The other is the IMW Working Group, an association of agencies, conservation groups, and private landowners who plan, implement, and monitor the effects of restoration efforts in the project area.



Source: <http://www.middleforkimw.org/>

With their input we settled on a set of measures to assess changes in socio-economic well-being in Grant County and to estimate the socioeconomic contribution of MFIMW restoration work, and then proceeded to collect and analyze the data reported here.

THE RESTORATION ECONOMY AND COMMUNITY INDICATORS FOR GRANT COUNTY

The MFJD sub-basin is an 800 square mile area in the northeast part of Grant County, an isolated, mountainous region of Eastern Oregon. Grant County itself covers approximately 4,500 square miles and the nearest interstate highway on-ramp is more than one hundred miles away. About 65 percent of the county is public land and national protected areas; and several reaches of the John Day River and its tributaries are designated as Wild and Scenic. It is sparsely populated – currently about 7,000, down from a peak of 8,200 thirty years ago.

Grant County epitomizes the historic natural resource based economy of the rural West, especially the Intermountain West. The re-settlement of the area (as Euro-Americans drove out the Native American population) began with gold mining in the 1860s, and the local culture is still strongly tied to its roots as one of the first Western mining areas. Sheep ranching was prominent in the late nineteenth and early twentieth centuries. By the 1920s and 1930s, cattle ranching and timber harvesting and processing became the dominant economic sectors. Commodity production in cattle and timber remain important. However, production and profitability in both those industries has been in long-term decline since the 1980s, and the region is struggling to maintain an economic base.

Like the rest of the county, the MFJD sub-basin has been highly dependent on primary production in timber, beef cattle, and (to a lesser extent) mining.

Although they have been declining, those industries remain important parts of the local economy. The majority of the MFIMW area is on the Malheur National Forest. Several large private parcels formerly managed for cattle and/or timber production are now owned and/or managed by restoration-focused organizations such as the Confederated Tribes of Warm Springs, The Nature Conservancy, and the Confederated Tribes of the Umatilla.



1948 cattle ranching in Grant County (Extension and Experiment Station Communications Photograph Collection, OSU Special Collections and Archives, retrieved at oregondigital.org)

The MFIMW is the site of a vigorous effort at environmental restoration, with the aim of returning the sub-basin to a close approximation of its condition prior to the coming of intensive grazing, logging, and mining, re-creating both its structure and function through measures such as stream bank stabilization, revegetation, and restoring meandering channels. The direct intention is of course to bring back endangered fish species. A hoped-for side effect of the restoration work is socio-economic benefit to the community – the restoration economy.

To understand the context of the local restoration economy we developed a set of indicators of the overall socio-economic well-being of the local community, which we define as Grant County because the MFIMW is totally contained within the county and most available data on socio-economic health are collected at the county level. We depended on existing data for the indicators because it would be both technically difficult and cost-prohibitive to collect original data.

Working with the ad hoc expert panel, we reviewed the indicators developed in the 2009 preliminary study, dropping one measure and adding two others, as follows:

- Overall population
- School enrollment (added)
- Total employment and job ratio (employment/population)
- Average earnings per job
- Per capita income
- Components of personal income (earned income, property income, transfer payments)
- Employment by major industry
- Housing (added)
- Economic diversification (Hachman Index) (dropped)

Except where otherwise noted, these indicators are taken from calculations by the Oregon Regional Economic Analysis Project (OR-REAP) with data provided by the U.S. Department of Commerce, Bureau of Economic Analysis.

"Felling a tree using an electric power saw," from Malheur National Forest, USFS photo #426966 (Gerald Williams Photo Collection, OSU, retrieved at oregondigital.org)



POPULATION

In the mid-1980s and again in the last half of the 1990s the overall population of Grant County exceeded 8,000, but it has trended downward over the last fifteen years and is now a little above 7,000. This parallels the trend in rural eastern Oregon overall. The non-metropolitan eastern Oregon¹ share of the state's population has declined from more than eleven percent in 1980 to less than nine percent in recent years.

Grant County Population 1970-2015

Year	Grant County Total Population	Grant County Population Percent of Statewide Total	Nonmetro Eastern Oregon, Percent of Statewide Total
1970	7,095	0.34%	11.56%
1980	8,208	0.31%	11.08%
1990	7,870	0.28%	10.18%
2000	7,906	0.23%	9.82%
2010	7,458	0.19%	9.17%
2015	7,185	0.18%	8.76%

Source: Calculations by the Oregon Regional Economic Analysis Project (OR-REAP) with data provided by the U.S. Department of Commerce, Bureau of Economic Analysis, 2016

As well, the population is aging. The fraction aged 65 and over increased from 16.8% in 1980 to 28.2% in 2015. And school enrollments have declined across the county, from over 1,400 in fall, 2000 to 900 in fall, 2016.

Grant County Public School Enrollment, 2000-2016

District	2000	2005	2010	2011	2012	2013	2014	2015	2016
Dayville SD 16J	73	68	55	51	60	60	58	52	50
John Day SD 3	982	769	683	671	621	611	617	592	615
Long Creek SD 17	85	60	46	38	37	36	26	28	34
Monument SD 8	72	50	55	45	44	45	48	59	62
Prairie City SD 4	249	151	149	157	149	149	142	148	139

Source: Oregon Fall Membership Reports for the years 2000-2001 through 2016-2017, Oregon Department of Education, available at www.ode.state.or.us

EMPLOYMENT

The decline and aging of the population are counterbalanced by a recent small upturn in employment. The number of jobs in Grant County bottomed out in 2012 at 3,617; by 2015 (the most recent year for which data are available) the job count was up to 3,718.

Similarly, the job ratio (the number of people employed/total population) has inched up, from 0.49 in 2012 to 0.52 in 2015. And the unemployment rate, 7.1% according to the Oregon Employment Department’s Research Division, is at its lowest point since comparable records began in 1990.

Grant County Employment Change, 1970-2015

Year	Grant County Employment	% of Statewide Total	Grant County Job Ratio	Job Ratio: % of U.S. Average
1970	3,451	0.37%	49%	108.60%
1980	3760	0.28%	46%	91.32%
1990	4360	0.27%	55%	99.97%
2000	4347	0.21%	55%	93.82%
2010	3780	0.17%	51%	90.61%
2011	3680	0.17%	50%	87.80%
2012	3617	0.16%	49%	86.62%
2013	3655	0.16%	50%	87.20%
2014	3691	0.16%	51%	87.94%
2015	3718	0.16%	52%	87.45%

Source: Calculations by the Oregon Regional Economic Analysis Project (OR-REAP) with data provided by the U.S. Department of Commerce, Bureau of Economic Analysis

EARNINGS

Incomes are also moving up in Grant County compared to state and national incomes, although they are still relatively low. From 1990 to 2010 average earnings per employed person in Grant County were less than 70% of Oregon as a whole and less than 60% of the U.S. average. By 2015 they were almost 79% of the state average and over 70% of the U.S. average. For comparison, in 2015 eastern Oregon non-metro average earnings were 81.9% of the state.

Grant County Average Earnings per Job, 1980-2015

Year	Earnings (Current \$)	Grant County % of Statewide Average	Grant County % of U.S. Average	Eastern Oregon Non-Metro as % of Oregon Average
1980	\$13,823	89.41	88.09	91.92
1990	\$17,691	73.86	66.44	82.48
2000	\$22,923	62.59	57.34	77.49
2010	\$31,082	68.93	59.92	79.67
2011	\$33,213	71.77	62.34	80.08
2012	\$36,268	74.44	66	81.67
2013	\$36,466	73.92	65.72	81.3
2014	\$39,568	78.12	69.61	81.45
2015	\$41,777	78.93	71.75	81.9

Source: Calculations by the Oregon Regional Economic Analysis Project (OR-REAP) with data provided by the U.S. Department of Commerce, Bureau of Economic Analysis, 2016.

PER CAPITA INCOME

Like earnings per job, per capita incomes in Grant County bottomed out in the early years of the new century but have now returned to near 1980-85 levels. In 2015 they were almost 90% of that of Oregon as a whole and slightly over 80% of the U.S. average.

Grant County Per Capita Income 1980-2015

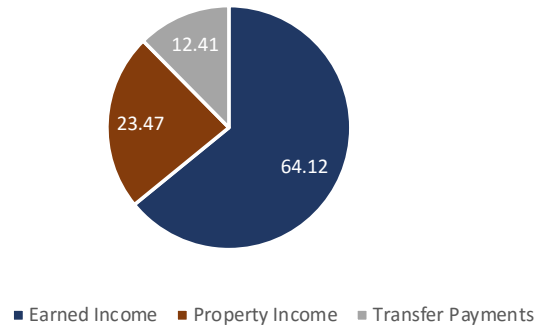
Year	Per Capita Income (Current \$)	Grant County % of Oregon Average	Grant County % of U.S. Average	Eastern Oregon Non-Metro as % of Oregon Average
1980	\$9,046	89.07	89.1	94
1990	\$15,083	83.5	76.99	83.19
2000	\$21,329	74.59	69.7	76.11
2010	\$29,270	82.01	72.67	82.72
2011	\$31,283	83.67	73.69	82.89
2012	\$32,772	83.81	74.03	83.39
2013	\$33,546	84.93	75.45	83.52
2014	\$36,627	87.86	78.91	83.61
2015	\$38,647	88.27	80.33	84.17

Source: Calculations by the Oregon Regional Economic Analysis Project (OR-REAP) with data provided by the U.S. Department of Commerce, Bureau of Economic Analysis, 2016.

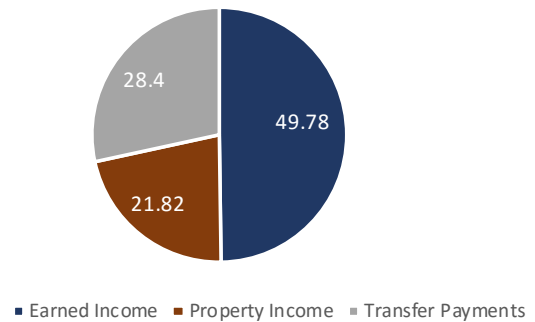
COMPONENTS OF PERSONAL INCOME

The aging of the population noted above is reflected in changes in the sources of personal income – earned income, property income, and transfer payments. Earned income is defined as compensation for labor services, wages and salaries paid for work. Property income represents payments in the form of dividends, interest and rent for the services of capital owned by persons. Transfer payments are payments that are not related to the provision of services. The most important are Social Security and disability payments. The next largest category is medical payments, programs such as Medicare and Medicaid. Transfer payments, which accrue primarily to the elderly, have more than doubled in Grant County, from about 12% percent of all personal income in 1980 to over 25% in 2015. Over the same period, as the fraction of the population that is working age declined, earned income also declined, from two-thirds of all personal income in 1980 to less than half in 2015. Property income has held steady at 20-25% over that time.

Major Components of Personal Income, 1980



Major Components of Personal Income, 2015



Major Components of Personal Income in Grant County, 1980-2015

Year	Earned Income	Property Income	Transfer Payments
1980	\$64	23.47	12.41
1990	\$58	26.87	15.46
2000	\$54	25.43	20.95
2010	\$47	22.16	30.45
2011	\$47	22.45	30.2
2012	\$49	22.53	28.31
2013	\$48	23.07	28.48
2014	\$49	22.22	28.55
2015	\$50	21.82	28.4

Source: Calculations by the Oregon Regional Economic Analysis Project (OR-REAP) with data provided by the U.S. Department of Commerce, Bureau of Economic Analysis, 2016.

EMPLOYMENT BY MAJOR INDUSTRY

Between the low point in 2012 and 2015, the most recent year for which data are available, Grant County added a total of 101 jobs, an increase of almost three percent. There was growth in both wage and salary employment and “nonfarm proprietors,” people starting their own businesses. Federal employment expanded, the number of state jobs held steady, and local government jobs declined a little. By industry, there was significant change between 2014 and 2015. For example, the number of jobs in “professional, scientific, and technical services” grew quite a bit.

Grant County Full-time and Part-time Employment by Major Industry

Employment by Place of Work	Year			
	2012	2013	2014	2015
Total Employment	3,617	3,655	3,691	3,718
By Type:				
Wage and Salary Employment	2,463	2,465	2,511	2,511
Proprietors Employment	1,154	1,190	1,180	1,207
Farm Proprietors	359	358	353	352
Nonfarm Proprietors	795	832	827	855
By Industry:				
Farm Employment	459	460	453	434
Construction	155	149	5	145
Wholesale Trade	41	45	48	52
Retail Trade	339	338	337	349
Information	88	90	100	116
Finance and Insurance	146	130	132	79
Professional, Scientific, and Technical Services	54	42	51	116
Administrative and Waste Services	146	130	132	97
Other Services (except Public Administration)	167	170	183	186
Federal Civilian	248	266	282	287
Military	20	20	19	18
State Government	124	120	125	129
Local Government	590	565	560	559
Other/Suppressed Industries*	1,065	1,114	1,105	1,201

HOUSING

Housing data provide valuable insights into socio-economic conditions. First, as with Oregon in general, Grant County households are somewhat more stable than the country as a whole: 94% of those who lived in Grant County in 2015 had lived there the year before. By comparison, about 88% of Americans as a whole live in the same county from year to year.

An important measure of socio-economic well-being is the fraction of household income spent on housing. As general principle, a household should spend no more than one third of their income on housing. Grant County residents measure up pretty well to that rule of thumb, though housing has gotten more expensive in the last five years, especially for renters.

Geographical Mobility In The Past Year for Current Residence, 2015

	Grant County	Oregon
Same House One Year Ago	85%	82%
Moved within Same County	9%	11%
Stable	94%	92%

Source: 2011-15 American Community Survey, 5-year estimates, B07003.

Households Spending More Than 35% of Income on Housing²

	Oregon		Grant County	
	2006-10	2011-15	2006-10	2011-15
With Mortgage	31%	27%	27%	31%
Without Mortgage	11%	12%	6%	11%
Renters	42%	45%	22%	34%

Source: US Census Bureau, 2011-15 American Community Survey, 5-year estimates, B25070 and B25091.

Grant County’s housing stock is somewhat older than that of Oregon as a whole. This suggests there was a decline in demand for dwellings as the population declined. That may be changing in recent years with the stabilization of the population level.

Age of Housing Stock, 2015

	Oregon		Grant County	
	Number of Units	Percent of Total	Number of Units	Percent of Total
Pre 1970	598,608	35%	2,004	46%
1970 to 1999	814,314	48%	1,772	41%
2000 or later	282,261	17%	544	13%
Total Housing Units	1,695,183	100%	4,320	100%

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates, B25034

The “profile” of dwellings suggests some interesting points. Although the proportion of single family houses in Grant County (71%) is similar to the state as a whole (68%), there is a much smaller fraction of multi-family units – apartments – in Grant County. This is explained by the much larger fraction of “other” dwellings – mobile homes – in Grant County. Mobile homes are typically much more abundant in small towns and rural areas and Grant County is no exception.

Housing Profile, 2015

	Oregon		Grant County	
	Number of Units	Percent of Total	Number of Units	Percent of Total
Single Family	1,154,878	68%	3,078	71%
Multi-Family	396,724	23%	311	7%
Other	143,581	8%	931	22%
Total Housing Units	1,695,183	100%	4,320	100%

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates, B25024

SUMMARY

These indicators paint a socio-economic picture of Grant County over the past 40-50 years in which there was a gradual decline, corresponding with the trend for rural eastern Oregon as a whole. However, things have stabilized and even moved up in some ways in recent years. Jobs and earnings are both up and transfer payments to the growing elderly population have also contributed to socio-economic well-being. The data on housing stability and costs support this conclusion.

The recovery in jobs and earnings is particularly relevant. The indicators cannot directly capture the effect of restoration work in the MFIMW (that is reported in the Outcome Measures section below), but it suggests a local economic revival of which the restoration economy is a part.

MEASURING THE SOCIO-ECONOMIC OUTCOMES OF THE MFJD IMW

In this section we estimate the contributions of the restoration economy to Grant County. Building on the approaches developed for the preliminary study in 2009 (Hibbard and Lurie 2010 2012), and drawing on more recent research (Nielsen-Pincus and Moseley 2013, BenDor et al. 2015), we use four measures to assess the socio-economic effects of MFIMW restoration and monitoring activities:

- the change in the number of restoration-related planning, management, and monitoring jobs in Grant County;
- the change in the number of restoration-related planning, management, and monitoring jobs in Grant County;

- the economic output effects of OWEB capacity grants to organizations in Grant County; and
- the employment and economic output effects of OWEB funded restoration projects in the MFIMW; and
- the employment and economic output effects of all restoration projects specifically in the MFIMW area.

increased from 52 (46.55 full time positions) to 97 (83.5 full time positions). These data are based on interviews with key personnel in relevant organizations in 2010 and 2017. The numbers include full-time and regularly recurring part-time and seasonal jobs. They do not include contract workers or paid jobs that function as internships or other learning opportunities because we were not able to assemble comprehensive data on such positions. However, there may be a significant number of them. For example, in summer 2017, the NFJDWC expected to employ 61 local students representing 6.25 annual FTE.

RESTORATION-RELATED PLANNING, MANAGEMENT, AND MONITORING JOBS IN GRANT COUNTY

The MFIMW restoration effort embodies a wider effort across Grant County – indeed across the Pacific Northwest. The number of organizations concerned with restoration in Grant County increased from 10 to 13 between 2000 and 2016, and the number of people they employ in restoration planning, management, and monitoring

OWEB CAPACITY GRANTS

OWEB provides capacity grants – basic operating funds – to watershed councils and soil and water conservation districts (SWCD) around the state. Hibbard and Lurie (2006) calculated a multiplier⁴ of 5.09 for OWEB capacity grants. That is, every OWEB capacity grant dollar generates an additional \$5.09 for the local community.

Restoration Related Planning, Management, and Monitoring Jobs in Grant County: 2000, 2009, 2016

Organization	2000		2009		2016	
	FTEs	Employees	FTEs	Employees	FTEs	Employees
Grant County Soil and Water Conservation District	4.00	5	7.50	8	8.00	10
North Fork John Day Watershed Council	1.50	2	3.75	4	5.50	6
Confederated Tribes of Warm Springs	2.00	2	6.40	10	18.90	20
Oregon Department of Fish and Wildlife	27.25	29	30.50	33	33.00	37
The Nature Conservancy	1.00	1	2.50	3	0.00	0
USDA Malheur National Forest	6.00	6	7.00	7	10.00	10
USDI Bureau of Reclamation	0.00	0	1.00	1	1.00	1
South Fork John Day Watershed Council	0.00	0	0.50	1	1.20	2
Natural Resources Conservation Service	1.50	2	2.00	2	2.00	2
Monument Soil and Water Conservation District	3.00	3	1.00	1	2.00	2
Oregon Department of Forestry	0.00	0	0.00	0	0.45	3
Oregon Water Resources Department	0.30	2	0.30	2	0.30	2
USDA Farm Service Agency	Unknown	Unknown	Unknown	Unknown	0.10	1
Blue Mountains Forest Partners	0	0	1	1	1	1

Relevant to the MFIMW, from 7/1/07 to 6/30/17, the NFJDC received \$521,575 in capacity grants and the Grant County SWCD \$755,575, for a total of \$1,277,150. Considering the multiplier, the capacity grants added about \$6.5m (1.3x5.09) to the local economy.

ESTIMATING THE EMPLOYMENT AND ECONOMIC OUTPUT EFFECTS OF RESTORATION PROJECTS

Identifying the employment and economic output effects of restoration work is of great interest to policy makers and natural resource managers. For this study, we collected data from OWEB files on grants they awarded for restoration projects in the MFIMW area during the period of interest (7/1/07 through 6/30/17) and then applied multipliers derived specifically for Oregon’s restoration economy (Nielsen-Pincus and Moseley 2013) to produce estimates of the overall effects on employment and economic output. Finally, we extrapolated from that to estimate the overall socio-economic effects of all restoration work in the MFIMW area over the same period.

It is important to keep in mind that we are looking only at the limited geographic area of the MFIMW. Much additional restoration work was performed across the John Day basin in Grant County between 2007 and 2017. This study does not reflect the socio-economic impacts of those investments

OWEB Grants in the IMW Area

OWEB made 21 grants for MFIMW restoration projects in the period of interest, most in partnership with other funders. We were able to obtain detailed data on 19 of those grants, which provided a total of \$2,644,919. Several important points underlie those numbers.

- The 19 grants for which we have data led to 33 contracts for restoration work. Of these, 23 (70%) were with Grant county organizations; 18 of the 23 (78%) were private firms. As well, over half the dollar value of the contracts (54%) was with Grant County organizations. That figure would be 65.9% except for one very large contract with an out-of-county non-profit organization.

- The largest Grant County contract was for \$381,446; the smallest was for \$225; and the average was \$40,883. The largest out-of-county contract was for \$422,536; the smallest was for \$5,020; and the average was \$44,526. Overall, the average contract was \$42,363.

Summary of MFIMW Contracts from OWEB Grants by Location and Dollar Size

Location by County	Total Contracts	\$ Total	% of Total \$
Benton	1	23,709	1.03%
Crook	1	219,008	9.60%
Deschutes	1	112,868	4.90%
Grant	23	1,231,255	53.70%
Multnomah	3	433,734	18.90%
Union	3	188,097	7.98%
Out-of-state (WA)	1	88,000	3.80%
Totals	33	2,291,671	99.91%¹

[1] Does not equal 100% because of rounding.

The 19 OWEB grants also entailed the purchase of materials and supplies. Forty percent (10/24) of the vendors were located in Grant County and 45% of the dollar value of the purchases was with them.

Summary of MFIMW Material/Supply Purchases from OWEB Grants by Location and Dollar Size

Location by County	Total # of Purchases of Materials/Supplies	\$ Total	% of Total \$
Baker	2	189	0.08%
Benton	1	100	0.04%
Deschutes	2	23,828	9.60%
Grant	10	112,648	45.40%
Multnomah	3	17,080	6.90%
Umatilla	2	10,838	4.40%
Union	3	49,525	19.97%
Wallowa	1	33,735	13.60%
TOTALS	24	247,943	99.99%¹

[1] Does not equal 100% because of rounding.

- Of the \$2,644,919, 93% (\$2,459,775) was expended directly on restoration activities and 7% (\$185,144) was used for project management, fiscal administration, and post-implementation work.
- The \$2,644,919 for the 19 OWEB grants was leveraged with \$5,457,365 in cash match and \$1,876,680 in in-kind match contributed by partners participating in the OWEB funded restoration projects. Summing the grant awards and the cash and in-kind match, total project costs were \$9,978,964. The total cost of the two grants for which we do not have detailed data was \$285,610 (\$132,900+\$152,710). Adding this in, the overall project costs of the OWEB grants in the MFIMW area was \$10,264,574.

Applying the 65.9% of contracting dollars spent in Grant County to the overall project costs (\$10,264,574), we calculate a direct economic effect of approximately \$6,764,354 in Grant County – \$6.8M in round numbers – from the OWEB grants.

Multipliers developed by Nielsen-Pincus and Moseley (2013) allow us to use that number to estimate the employment and economic output effects of the MFIMW restoration projects. They calculated that each million dollars invested in restoration produces an average of 16.3 total jobs (direct, indirect, and induced). Thus, in the ten years of the MFIMW the \$6.8M in restoration activities related to the OWEB grants produced an estimated 111 jobs (6.8×16.3).

Further, Nielsen-Pincus and Moseley calculated that each million dollars of restoration work produces additional economic output of \$1.9 to \$2.4 million. Over the ten years of the MFIMW, the \$6.8M in restoration activities related to the OWEB grants produced an estimated additional economic activity of \$12.9 to \$16.3M ($6.8 \times \$1.9$ to $6.8 \times \$2.4$).

In summary, a majority of the expenditures from OWEB grants to support MFIMW restoration work went to Grant County contractors and suppliers. Those expenditures rippled through the economy

to produce more than 100 jobs and \$12-16M in economic output.

EXTRAPOLATING TO ALL MFIMW PROJECTS

During the period of interest a total of 100 restoration projects were carried out in the MFIMW area, including the 21 OWEB-funded projects. Detailed financial data are not available for any of the non-OWEB grants that supported these projects. A further concern is that the reported project costs are much lower than for the OWEB projects, and varies from project to project. For example, in-kind match is included in some reports but not in others. As well, data are missing for 20 of the 100 MFIMW projects. Thus, our estimates of the socio-economic effects of all MFIMW projects are systematically low, nor are they as precise as for OWEB-funded projects only. With those limitations in mind, we approximated the employment and economic output effects of all MFIMW restoration projects.

The total cost of the 80 projects for which we have data was \$15,600,126, \$15.6M in round numbers. We would expect this to be much larger. It is only about 40% more than we found for the 19 OWEB-funded projects, even though it includes four times as many projects (19 vs. 40). Thus, the following analysis is probably very low.

- Applying the 65.9% of contracting dollars spent in Grant County (calculated from the OWEB data) to the estimated overall project cost of \$15.6M, we estimate a direct economic effect to Grant County from the MFIMW projects of at least \$10,280,400 – \$10.3M in round figures.
- Using the Nielsen-Pincus and Moseley calculation that each million dollars invested in restoration produces an average of 16.3 total jobs, we estimate that MFIMW projects produced at least 168 jobs (16.3×10.3).
- Using the Nielsen-Pincus and Moseley calculation that each million dollars of restoration work produces additional economic output of \$1.9 to \$2.4 million,

over the ten years of the MFIMW, the \$10.3M in MFIMW restoration activities produced estimated additional economic activity of at least \$19.6 to \$24.8M (\$10.3x\$1.9 to \$10.3x\$2.4).

US FOREST SERVICE PROJECTS

Much of the IMW area is on the MNF and the USFS is very active in implementing various regional and national restoration programs (CFLRP, Accelerated Restoration). It is therefore of interest to examine separately the USFS projects that are included in the 100 MFIMW projects carried out during the period of interest.

USFS projects vary in contract opportunities for design and implementation but in structure and composition they resemble other MFIMW restoration projects. To take some examples:

- The USFS contracted the design and implementation of the MFJDR Historic Meander Reconnection Project.
- Many of the USFS Aquatic Organism Passage Projects were designed by USFS engineers and implemented by local contractors, until staff turnover occurred and the designs were also contracted out.
- Fencing projects are contracted out and provide opportunities for jobs. These projects likely resulted in maximizing grant dollars to restoration on the ground.

Thus, it is reasonable to apply the Nielsen-Pincus and Moseley multipliers to the USFS projects. The restoration inventory that we used documented a total of 48 projects that the USFS carried out in the MFIMW area during the period of interest, at a total cost of more than \$4.5M (cost information was not available for three projects). Again applying the 65.9% of contracting dollars spent in Grant County (calculated from the OWEB data), we estimate that the \$4.5M total cost of MNF projects produced about \$3M in contracting dollars spent in Grant County (\$4.5x.659).

- Using the Nielsen-Pincus and Moseley calculation, the \$3M in restoration activities on the MNF produced about 49 jobs (3x16.3).
- The \$3M in restoration activities produced estimated additional economic activity of at least \$5.7 to \$7.2M (\$3x\$1.9 to \$3x\$2.4).

In addition to the restoration work in the MFIMW, the USFS has extensive restoration planning and implementation activities across the MNF. Most of the restoration implementation work identified during planning is conducted through the Malheur's 10 Year Stewardship Contract with local contractor, Iron Triangle. While this is beyond the scope of our analysis, it further reflects the importance of the USFS contribution to the restoration economy in Grant County.

OWEB CAPACITY GRANTS

OWEB provides "capacity grants" – basic operating funds – to watershed councils and soil and water conservation districts around the state. Hibbard and Lurie (2006) calculated a multiplier of 5.09 for OWEB capacity grants. Every OWEB capacity grant dollar generates an additional \$5.09 for the local community.

Relevant to the MFJD IMW, from 7/1/07 to 6/30/17, the NFJDWC received \$521,575 in capacity grants and the Grant County SWCD \$755,575, for a total of \$1,277,150. Considering the multiplier, the capacity grants added about \$6.5m (1.3x5.09) to the local economy.



DISCUSSION

SUMMARY OF RESULTS

We began our work by collecting data on a set of community indicators of the overall socio-economic well-being of Grant County. We used a highly participatory process to identify indicators that measure features of importance to the local community. The purpose of the indicators is to establish a context, a description of the community that helps to interpret the outcome measures.

The indicators cannot specifically capture the role of MFIMW restoration work in advancing the apparent local resurgence, but the two are moving in parallel. As measured by the community indicators, the Grant County economy is doing better at the same time that restoration work is bringing work and money into the economy. With respect to restoration work, we found that:

- The number of restoration related planning, management, and monitoring jobs in Grant County nearly doubled between 2000 and 2016.
- OWEB capacity grants – basic operating funds for watershed councils and SWCDs have brought a total of \$1,277,150 to Grant County since 2007. When the multiplier of 5.09 is considered, capacity grants brought about \$6.5m to the local economy.

- Many restoration projects have been carried out in the John Day basin in the period from 7/1/07 to 6/30/17. Of interest for this project are the 100 projects in the MFIMW. We collected data from OWEB to give us an empirical base from which to make projections on all the MFIMW projects and separately, on MNF projects in MFIMW area. The results are summed up in Table 15. (Note that these figures are not summative, they overlap in undetermined ways.)

Based on the indicators they selected, people in Grant County are highly concerned about the trajectory of their economy – where it has been and where it might be heading. Over the past 40-50 years Grant County was in decline. However, things are improving recently. Most relevant to this study, jobs and earnings are both up, and other indicators support that trend.

OUTCOMES

IMW projects are making a significant contribution in jobs and dollars to Grant County. While it is methodologically impossible to demonstrate a direct cause-and-effect relationship, the IMW restoration economy has almost certainly contributed to the increase in jobs and earnings and thus to the socio-economic stabilization of Grant County.

Summary of Jobs and Additional Economic Activity in Grant County from MFIMW Projects 7/1/07-6/30/17

Organization	All-projects Total Cost	Jobs (direct, indirect, and induced)	Additional Economic Activity Generated
OWEB-19 projects	~\$10.3M	111	\$12.9 - \$16.3M
All projects-80¹	at least \$15.6M	168	\$19.6 - \$24.8M
MNF-48	~\$4.5M	49	\$5.7 - \$7.2M

[1] As noted, we have data on only 80 of the 100 total MFIMW projects.



EXPORTABILITY

This project reinforces the guiding principles for monitoring the community socio-economic effects of ecosystem restoration discussed above. First, the measures themselves are context-specific. Both the indicators and outcome measures were developed in consultation with local officials and residents, to gauge things that are important to them. And second, the measures can be used to inform the general public about the socio-economic contribution of restoration efforts and as an input to public decision making and action. The lesson is that while the measures may not be generalizable to other restoration sites, the process of developing and applying measures is exportable. Thus, this project is a contribution to the small but growing body of literature that is seeking to develop a framework for socio-economic monitoring of restoration efforts.

END NOTES

1. *Non-metropolitan eastern Oregon consists of Baker, Gilliam, Grant, Harney, Malheur, Morrow, Umatilla, Union, Wallowa, and Wheeler counties.*
2. *"With Mortgage" refers to all forms of debt where the property is pledged as security for repayment of the debt. The category "without mortgage" is comprised of housing units owned free and clear of debt*
3. *A multiplier is the factor by which gains in total output are greater than the change in spending that caused it.*



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