A Research Paper by

HEADWATERS ECONOMICS

The Transition from Western Timber Dependence: Lessons for Counties

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ABOUT HEADWATERS ECONOMICS

Headwaters Economics is an independent, nonprofit research group whose mission is to improve community development and land management decisions in the West.

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This report was updated in December 2021 to reflect a change to a non-parametric statistical test and different conclusions for two of the five economic indicators.

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Cover Images clockwise from left: (A) World's largest Douglas-fir in Clatsop County, Oregon, 1945 (Photo: USFS); (B) National and regional leaders for the Bureau of Land Management visit a timber sale demonstration in Salem County, Oregon, July 2014 (Photo: BLM Oregon); (C) Navy personnel and workers from Insitu, a Klickitat County, Washington-based company prepare an unmanned aerial vehicle (Photo: US Navy); (D) Skamania Lodge, Skamania County, Washington (Photo: Flickr).

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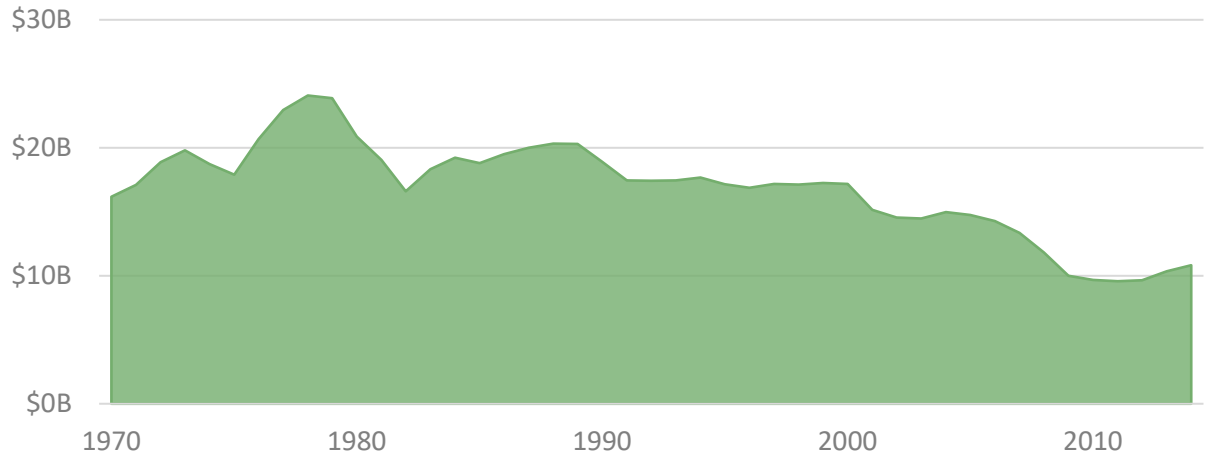
I. Introduction

For several decades, timber dominated some county economies in the West (defined here as the 11 contiguous western states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming). In the 1970s, timber represented more than 20 percent of all earnings in 25 western counties; today, only a handful of counties earn more than ten percent from timber.

Like the rest of the West, formerly timber-dependent counties show diverse socioeconomic performance—some are holding steady, some are growing rapidly, and others are falling behind. This report draws lessons from formerly timber-dependent counties that fared better after timber harvests declined in the late 1980s and early 1990s. These counties leveraged their natural amenities that provide beauty and recreational opportunities, took advantage of connectivity to metropolitan markets, engaged in collaborative planning, and embraced adaptability. Lessons from their transitions can inform current efforts to stabilize and diversify resource-dependent counties, including those experiencing the loss of major energy employers such as coal mines and coal-fired power plants.

Labor earnings from timber-related jobs in the West, in billions of 2016 dollars.



Source: Bureau of Economic Analysis, Regional Economic Accounts

This report addresses several questions:

1. Which counties were dependent on timber during the industry's peak period (1970-1989)?
2. How does recent socioeconomic performance (2001-2015) vary between historically timber-dependent counties and non-timber-dependent counties in the West?
3. How does recent socioeconomic performance vary among the historically timber-dependent counties?
4. Why are some formerly timber-dependent counties performing better than others?

In this report, performance is based on five economic and demographic measures of growth and prosperity: population change, families in poverty, adults with college degree, median household income, and average earnings per job. Three case studies help tell the stories of counties that have better-than-average performance relative to other historically timber-dependent counties. We describe how they are adapting to major declines in timber jobs and income in different ways.

II. Timber Dependence in the West

Defining Timber Dependence

We define historically timber-dependent counties as those counties in which timber-related jobs contributed 20 percent or more of total workers' earnings from 1970 to 1989, the period when labor earnings from timber-related jobs were highest.[1] This definition allows us to identify and then focus on the 25 most timber-dependent counties in the West, shown in the map and table below.[2]

Top 25 Timber-Dependent Counties in the West

We measured "dependence" in terms of labor earnings derived from timber employment, as provided by the Bureau of Economic Analysis (BEA). We defined the timber industry as consisting primarily of people employed and earning wages in lumber, wood products, and paper manufacturing. See the Methods section in Appendix A for more details.

Throughout this study, historically timber-dependent counties are compared to other western counties with fewer than 200,000 people. Our comparisons exclude counties with more than 200,000 people because historically timber-dependent counties tend to have small populations, ranging from approximately 7,000 to 119,000 people.

[1] The extent to which communities are dependent on timber has been defined differently by other studies. For example, U.S. Forest Service assessments of timber-dependent communities focus on communities where 50 percent of local wood processed was federal timber. This study more broadly defines income from all timber-related jobs and does not focus on federal timber harvests. We selected to focus on counties where 20 percent or more of workers' earnings came from timber-related jobs, resulting in a small set of highly timber-dependent counties.

[2] We verified that this study's conclusions were not impacted by our definition. We repeated the study using a more liberal definition, by selecting the 50 counties where timber-related jobs contributed 10 percent or more of worker's earnings during the 1970s and 1980s, and the study's conclusions remained the same.

Top 25 Historically Timber-Dependent Counties in the West

	Timber Dependency Measures[1]			Current Economic Performance Measures (2015)				
County	Timber Earnings 1970-1989	Timber Earnings 2001-2014	Change in Average Timber Earnings, 1970-2014[1]	Population Change per 1,000 people[2]	Families in Poverty[3]	Adults with College Degree[3]	Median Household Income[3]	Average Earnings Per Job[2]
Benewah County, ID	44%	17%	-31,122,000	-1.0	11.7%	13.3%	39,863	40,150
Bonner County, ID[4]	**25%**	**6%**	**-40,101,000**	**8.2**	**11.0%**	**20.9%**	**42,171**	**33,232**
Clearwater County, ID	43%	10%	-72,757,000	-2.7	9.2%	16.9%	38,837	38,033
Columbia County, OR	26%	4%	-104,998,000	8.5	8.4%	18.2%	53,179	37,809
Coos County, OR	26%	7%	-204,749,000	0.5	11.7%	18.3%	38,605	42,815
Cowlitz County, WA	35%	18%	-224,112,000	7.0	12.5%	16.0%	47,452	54,852
Crook County, OR	40%	12%	-49,081,000	7.5	12.5%	15.5%	37,106	43,730
Curry County, OR	30%	4%	-61,171,000	4.1	10.0%	23.5%	40,884	36,627
Del Norte County, CA	27%	0%	-83,228,000	-0.5	17.0%	15.1%	40,847	47,790
Douglas County, OR	34%	14%	-304,160,000	4.5	13.9%	15.7%	41,312	41,702
Gem County, ID	32%	2%	-44,023,000	6.7	11.3%	16.0%	40,828	28,668
Grant County, OR	28%	7%	-29,839,000	-5.7	11.0%	19.1%	38,046	41,777
Grays Harbor County, WA	29%	11%	-236,537,000	3.7	11.7%	14.7%	43,538	44,579
Idaho County, ID	26%	8%	-38,659,000	3.3	11.5%	19.3%	38,191	34,435
Klamath County, OR	25%	8%	-168,645,000	2.1	14.2%	19.7%	40,336	42,614
Klickitat County, WA	20%	2%	-52,710,000	5.9	10.9%	23.5%	48,319	48,047
Lewis County, WA	21%	10%	-74,421,000	6.6	10.5%	15.4%	44,100	45,164
Lincoln County, MT	30%	6%	-81,563,000	0.8	12.5%	19.4%	35,275	32,964
Linn County, OR	26%	9%	-202,174,000	10.6	13.7%	17.3%	45,644	44,275
Mason County, WA[4]	**26%**	**9%**	**-34,534,000**	**14.5**	**10.8%**	**17.7%**	**50,406**	**42,100**
Pacific County, WA	25%	6%	-52,247,000	-0.3	10.2%	16.8%	37,684	39,061
Plumas County, CA	22%	0%	-67,264,000	-7.1	8.3%	22.0%	47,333	45,759
Skamania County, WA[4]	**37%**	**1%**	**-47,329,000**	**9.1**	**9.7%**	**22.0%**	**52,374**	**37,666**
Tehama County, CA	20%	1%	-106,766,000	8.0	13.9%	14.4%	41,001	47,111
Trinity County, CA	26%	1%	-40,479,000	0.3	11.9%	20.0%	34,974	38,105
MEDIAN	26%	***7%***	***-67,264,000***	***4.1***	***12%***	***18%***	***40,884***	***41,777***

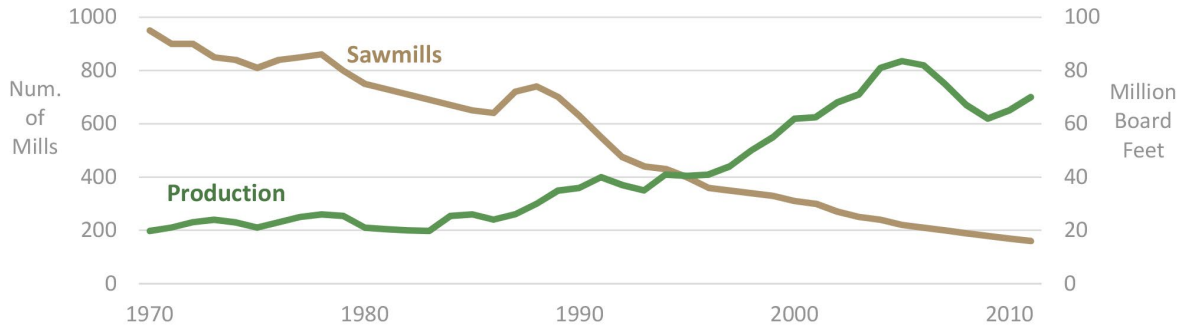
[1] Percent of labor earnings from timber jobs, Bureau of Economic Analysis's Regional Economic Accounts. Earnings were adjusted for inflation and are displayed in 2015 dollars. Change in average timber earnings is change from 1970-1989 to 2001-2014. See Methods in Appendix A for details.
[2] Bureau of Economic Analysis's Regional Economic Account. Population change is per 1,000 people from 2000-2015.
[3] U.S. Department of Commerce, Census Bureau, American Community Survey, 2016.
[4] Highlighted counties are described in case studies in this report.

Why Timber Declined Across the West

The timber industry, which historically has been one of the most visible forms of manufacturing in the West and an important employer in some rural towns, has declined and changed in fundamental ways.

During the past several decades, the transition to fewer, larger, technologically sophisticated and automated mills has led to declines in timber jobs and income. Automation and increased efficiencies make the recovery of those jobs and income unlikely.[1] During the past 40 years, the number of lumber mills in the West declined steadily, from 950 in 1970 to 160 in 2011, even as average productivity of sawmills increased from less than 20 million board feet each year to more than 70 million board feet.[2] In Oregon, for example, productivity gains explain why timber harvests increased by 50 percent between 2009 and 2013, while timber employment increased by only one percent. The same pattern emerges across the West.[3]

Timber production compared to number of sawmills in the West. The timber industry has experienced greater efficiency due to mechanization.



Source: Western Wood Products Association as Reported by the Oregon Office of Economic Analysis.

Automation is not the only factor affecting the timber industry in the West. During the early 1990s, a national shift among federal land management agencies toward ecosystem management and a decreased emphasis on timber production resulted in lower commercial harvest levels across the West. The 1994 Northwest Forest Plan, for example, resulted in sharp declines in timber harvested from federal lands in the Pacific Northwest, one of the most historically timber-dependent regions in the country. Between 1994 and 2000, timber employment in the Pacific Northwest is estimated to have decreased by roughly 10,000 jobs due to changed federal land management.[4]

More recently, the Great Recession resulted in a massive decline in the U.S. housing market and decreased demand for wood products. This, in turn, resulted in the loss of 71,000 western timber jobs from 2005 to 2009 and the closure of 30 large western mills between 2009 and 2010.[5]

Other factors that affect the western timber industry include the rapid rise of the Southeast as a major timber producer, and international trade agreements including increased imports from Canada.

Economic Performance in Historically Timber-Dependent Counties

All 25 historically timber-dependent counties defined in this study experienced declines in timber earnings since the 1970s and 1980s. The median decline in share of earnings from timber from 1970-1989 to 2001-2014 was 20 percentage points (ranging from a loss of 11 percentage points in Lewis County, Washington, to a loss of 37 percentage points in Skamania County, Washington).

The median loss in average earnings from timber from 1970-1989 to 2001-2014 was $64 million (in 2015 dollars), and ranges from a $30 million loss of average annual income in Grant County, Oregon, to a $304 million loss of average annual income in Douglas County, Oregon.[6]

Relative to other counties, historically timber-dependent counties also experienced a disproportionate decline in average wages across all sectors. On average, from 1970-1989 to 2001-2014, average annual wages per year dropped by $3,916 (in 2015 dollars) in former timber counties versus $1,558 in other non-timber-dependent counties with fewer than 200,000 people.

Current Performance Is Comparable in Counties With and Without Historic Timber Dependence

Despite the loss of a major employer and the associated declines in wages, current economic performance among historically timber-dependent counties, as a group, is comparable to other western counties with fewer than 200,000 residents.

We found no statistically significant differences between timber and non-timber counties according to three measures of socioeconomic performance:

1. Population change from 2000 to 2015 (in terms of annual change per 1,000 residents);
2. Wages across all sectors in 2015; and
3. Percent of families in poverty in 2015.

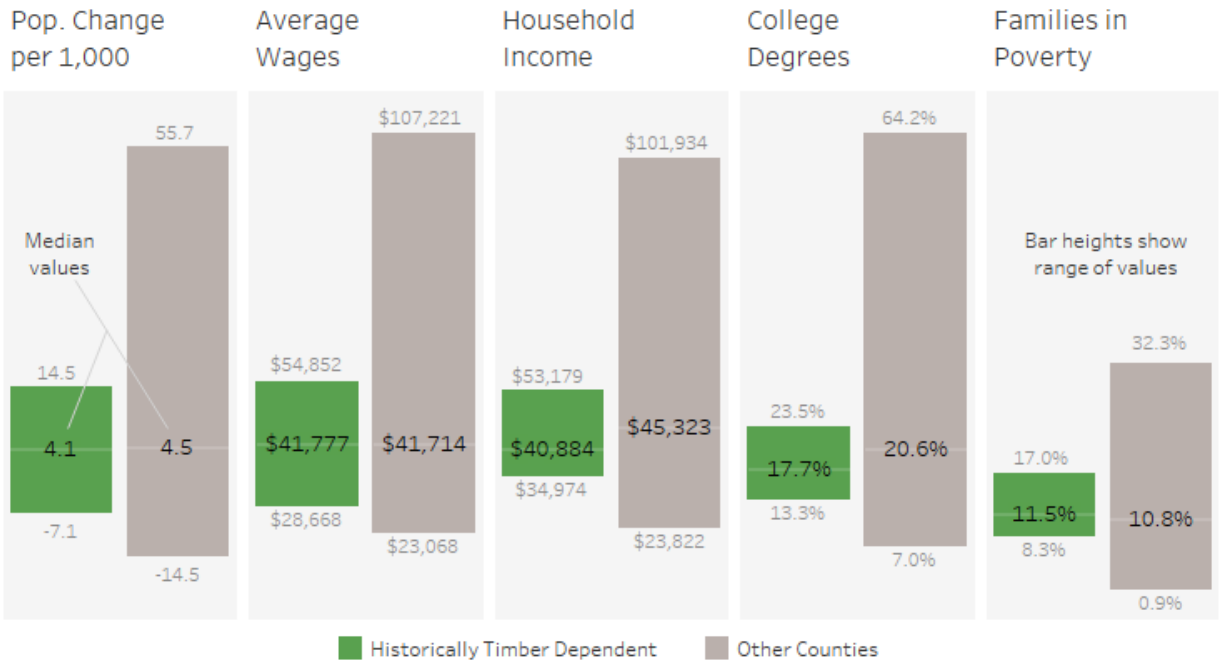
We found statistically significant differences between timber and non-timber counties according to two measures of socioeconomic performance:

1. Median household income in 2015 and
2. Percent of adults with a college degree in 2015.

We evaluated differences using simple paired t-tests (two-tailed, two-sample equal variance) for all indicators except median household income, for which we used a non-parametric test on the equality of medians. We found a wide spread in performance and extensive overlap with non-timber counties, which contributed to a lack of statistically significant differences for three of the five measures. (See figure below.)

The lack of statistically significant differences in population change, wages, and poverty rates suggests that timber dependence has limited long-term socioeconomic impacts. Although timber-related jobs often are relatively high-paying, this analysis demonstrates that in the long term, we do not see wages that are particularly higher or lower than in other comparable communities. Median household income and the share of adults with a college education are lower in timber-dependent communities. This finding suggests that timber-dependent communities lag behind comparable communities in human capital and wealth accumulation.

Socioeconomic performance measures in timber-dependent counties compared to other western counties with fewer than 200,000 residents. Despite declines in timber, current performance in historically timber-dependent counties is similar to other western counties.



Charts show the overlap in performance between historically timber dependent and other counties, with median values labeled. Differences are not statistically significant.

Economic Performance Varies Widely Among Historically Timber-Dependent Counties

Among historically timber-dependent counties, there is a wide range in current socioeconomic performance. Interactive data visualizations explore which counties have more successfully weathered declines in their timber sector and which have struggled with the transition. Each of the 25 historically timber-dependent counties faces challenges, but several stand out as having above-average socioeconomic performance in recent years: Bonner County, Idaho; Klickitat County, Washington; Mason County, Washington; and Skamania County, Washington.

For example, Mason County, Washington recently has experienced considerable population growth, higher household income, and relatively fewer families in poverty. Klickitat and Skamania counties in Washington share these positive characteristics, and have a higher share of college-educated adults. And Bonner County, Idaho, which is geographically quite isolated, is doing better than average in population change and educational attainment.

Despite signs of prosperity, Mason, Skamania, and Bonner counties have only moderate-to-low average earnings per job, likely due to these counties' transition to more amenity-based growth (i.e., in-migration driven by people who seek access to natural resources). Job earnings can lag household income when communities experience an in-migration of semi-retired workers who work part-time or seasonally, and an influx of people who move to an area for quality of life related to natural beauty and outdoor recreation rather than profit-maximizing reasons. While the average earnings in these counties are on par with peers

based on their population size, the loss of high-wage timber and manufacturing jobs has been felt acutely in these three counties.

[1] Hicks MJ and Devaraj S. 2015. *The Myth and the Reality of Manufacturing in America*. Muncie, IN: Center of Business and Economic Research, Ball State University. http://conexus.cberdata.org/files/MfgReality.pdf.
[2] Western Wood Products Association, as reported by the Oregon Office of Economic Analysis.
[3] Oregon timber harvest data were obtained from Bureau of Business and Economic Research, University of Montana. http://www.bber.umt.edu/FIR/HarvestOR.aspx. Lumber and wood products manufacturing employment figures were obtained from U.S. Department of Commerce (2016, Bureau of Economic Analysis, Regional Economic Accounts, Washington, D.C. Table SA25N). Figures showing the relationship between sawmill productivity and harvests can be found at Oregon Office of Economic Analysis (Wood Products Productivity, an Update: https://oregoneconomicanalysis.com/2012/01/26/wood-products-productivity-an-update/). Analysis of Oregon's wood products industry also showed that while wages in the wood products industry used to be 30 percent higher than the state average, today it pays the state average. (https://oregoneconomicanalysis.com/2012/01/23/historical-look-at-oregons-wood-product-industry/).
[4] Charnley S, Donoghue EM, Stuart C, Dillingham C, Buttolph LP, Kay WM, McLain RJ, Moseley C, Phillips RP, and Tobe L. *Northwest Forest Plan—the first 10 years (1994–2003): Socioeconomic monitoring results*. USDA Forest Service, Pacific Northwest Research Station, 2006.
[5] Keegan CE, Sorenson CB, Morgan TA, Hayes SW, and Daniels JM. 2011. Impact of the Great Recession and Housing Collapse on the Forest Products Industry in the Western United States. *Forest Products Journal* 61(8): 625-634.
[6] When comparing timber income between these time periods (1970-1989 versus 2001-2014), it should be noted that the methods for classifying workers changed between the periods. Under the earlier classification system (Standard Industrial Classification), workers were categorized according to what type of product they produced. Under the later classification system (North American Industry Classification System), workers are grouped based on the activity in which they are primarily engaged.

III. Case Study 1: Bonner County, Idaho

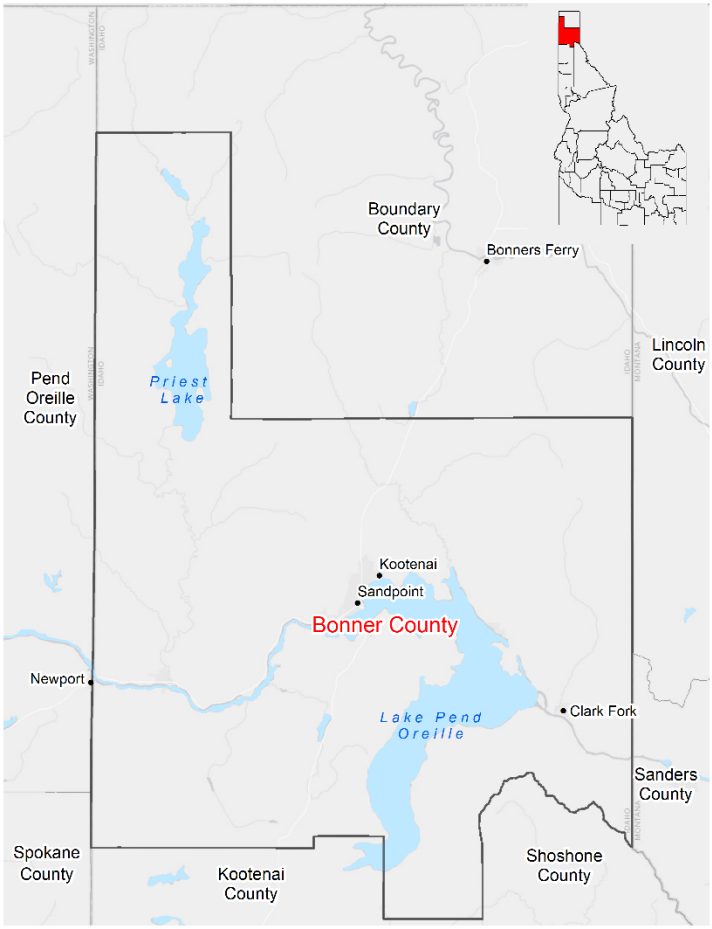
Bonner County's transition from timber dependency can be attributed to at least three factors: 1) natural amenities and a high quality of life that attract entrepreneurs, retirees, and tourists; 2) flexibility and adaptability to diversify and welcome new economic opportunities; and 3) engaged, collaborative planning among local government, business leaders, and nonprofits on economic development opportunities.

Timber History

Bonner County is in the Idaho panhandle at the northern tip of the state. The county is bordered by Spokane and Pend Oreille counties in Washington state to the west, Lincoln and Sanders counties in Montana to the east, Kootenai and Shoshone counties in Idaho to the south, and Boundary County, Idaho to the north. The county is home to Lake Pend Oreille, a 43-mile-long lake on which Sandpoint, the county seat, is located. Much of the current economic activity is centered around Sandpoint and surrounding communities. Sandpoint is more than an hour from Spokane, Washington, a large metropolitan center. Headwaters Economics has classified the county as "isolated" because of its distance from a major airport.[1] The U.S. Census Bureau considers the county to be a central Micropolitan Statistical Area because of its population size, just more than 42,000 people as of 2016. Most of the population does not live within the incorporated cities in the county.

At just more than one million acres in size, Bonner County is nearly an even split of private and federal land: 40 and 45 percent of land, respectively, in those two categories. The remaining 15 percent is state land. Most of the county is heavily forested. In the 1970s and 1980s, manufacturing jobs (including forest products) accounted for one-fifth to slightly more than one-quarter of the county's economy both in terms of employment (averaging 20 percent) and earnings (28 percent).[2]

Bonner County, Idaho



Timber as an industry in Bonner County dates to the 1880s. As early as 1903, products from the forest were claimed to have been "the greatest source of wealth" for the area.[3] The number of mills increased rapidly in the early days of the industry. At one point in the early 1900s, 20 mills were operating between Harrison (in Kootenai County to the south) and Bonners Ferry (in Boundary County to the north). The timber industry remained a backbone of the county's economy well into the late-1980s and early-1990s, but at that point it began to give way to service sector jobs both in terms of the number of jobs and total earnings.

While Bonner County began its transition from a timber-dependent economy later than many other timber-dependent communities in the rural West, by 2015,

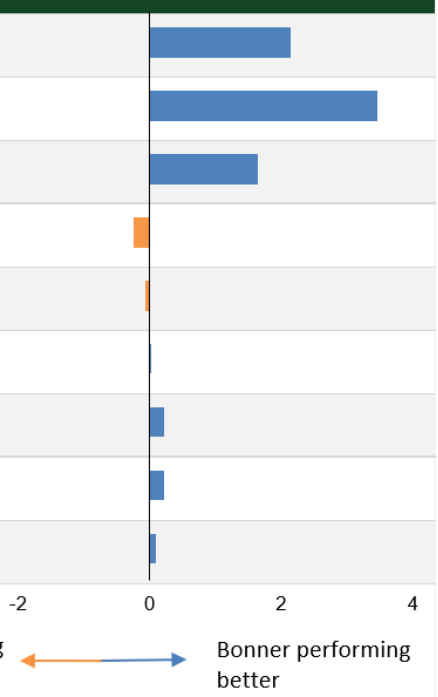
timber accounted for just five percent of jobs in Bonner County.[4] The pain of mill closures is still fresh for many Bonner County communities. In September of 2008, JD Lumber closed its sawmill in the small community of Priest River. The mill employed more than 200 people at that time. Gross receipts on the nearby Idaho Panhandle National Forests went from more than $20 million in the 1980s, to $2.5 million in 2016.[5]

Economic Transition

Despite the decline of timber jobs in Bonner County, the county is beginning to bounce back and is doing well compared to many of its peers. Compared to other formerly timber-dependent communities, the county has faster growth in population, employment, and personal income (see benchmarks below). Recent economic performance in Bonner County can be linked to at least three factors: 1) the area's natural amenities that help create a high quality of life; 2) flexibility and adaptability to diversify and welcome new economic opportunities; and 3) engaged, collaborative planning and business development.[6, 7]

Key socioeconomic benchmark indicators for Bonner County compared to the other 24 formerly timber-dependent counties.

	Indicators	Bonner County, ID	Timber Dependent Counties	Ratio of Bonner County, ID vs. Timber Dependent Counties
Trends	Population, % change, 1970-2015	167.7%	53.5%	
	Employment % change, 1970-2015	301.4%	67.5%	
	Personal Income, % change, 1970-2015	404.1%	153.3%	
Prosperity	Average Earnings per Job, 2015	$33,664	$44,442	
	Per Capita Income, 2015	$35,084	$37,692	
	Median Household Income, 2015	$42,171	$40,866	
	Adults with a College Degree, 2015	21%	17%	
Stress	Unemployment Rate, 2015	5.5%	7.0%	
	Families in Poverty, 2015	11.0%	12.2%	

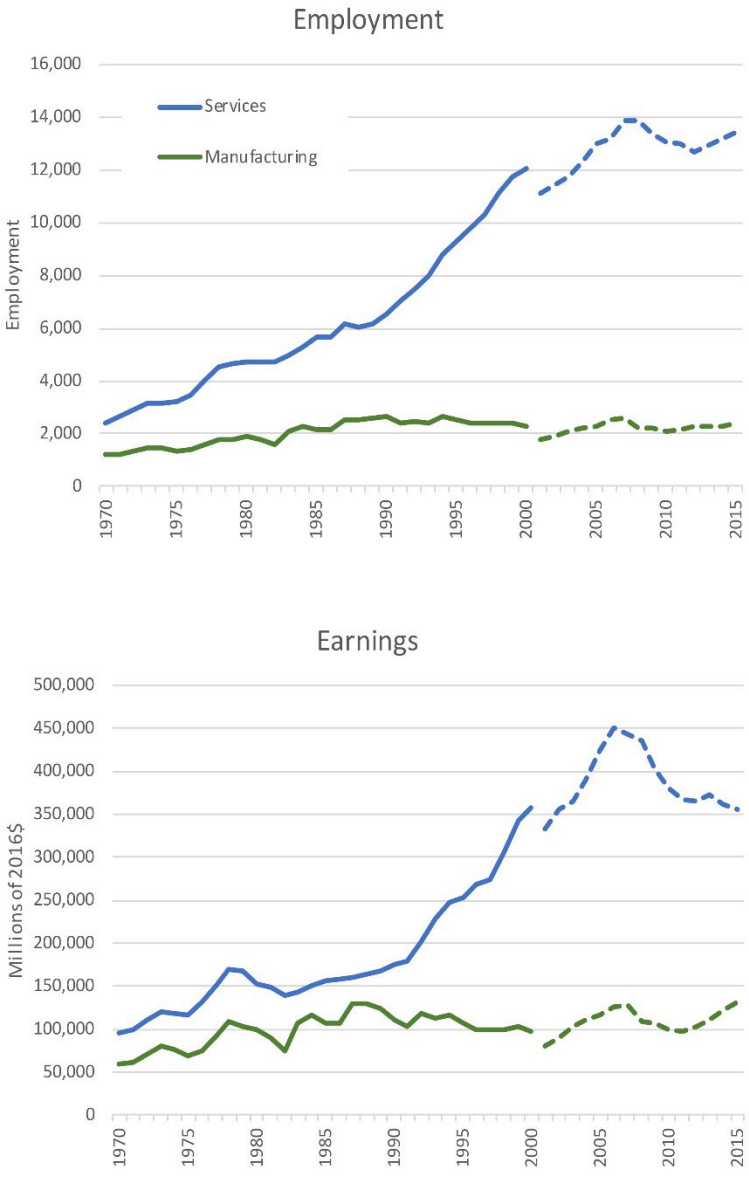


The leading private-employment sectors in Bonner County are retail trade, manufacturing, and construction. Bonner County's retail and construction sectors, due to the sheer volume of jobs, have helped to keep the county's economy afloat while it has diversified to include more high-paying, stable employment. Construction and retail jobs tend to be lower-wage and construction jobs are highly subject to economic downturns.

Bonner County also has managed to attract impressive new employers despite being a small, remote county. They include aerospace engineering, software development, and biotechnology. Jobs such as "Aerospace Assembly Technician," advertised recently by Tamarack Aerospace Group in Sandpoint, command an annual median salary of around $50,000.[8]

The county's manufacturing sector has seen significant changes. Manufacturing used to be dominated by lumber and wood products, but today has diversified into other sub-sectors. Timber-related products now represent just 19 percent of all manufacturing earnings compared to more than 95 percent in the 1970s. Manufacturing jobs increased in Bonner County in the period 2000-2010, even as they were declining

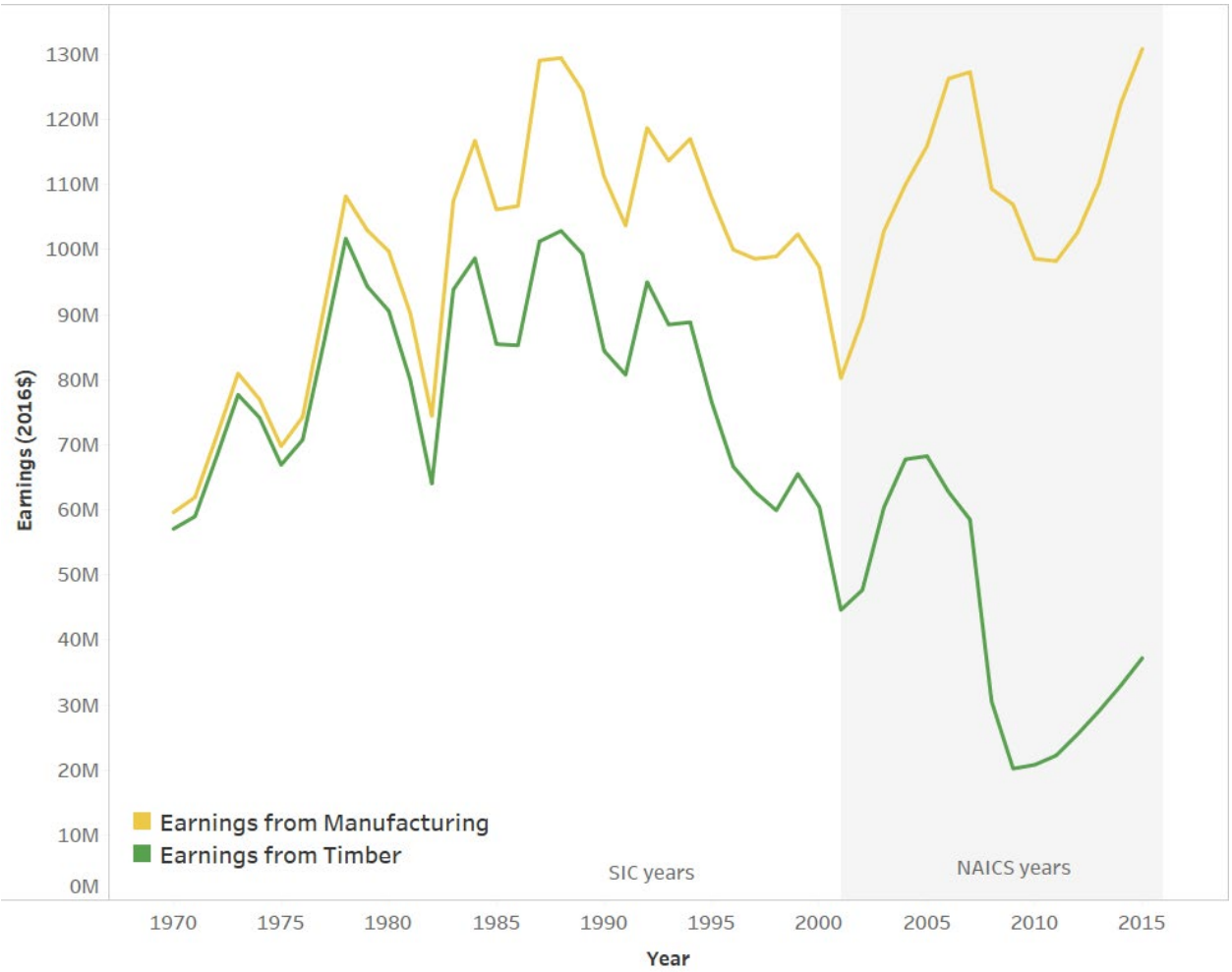
Bonner County employment and earnings in manufacturing as compared to services, 1970-2015. Manufacturing was dominated by lumber and wood products from 1970-1989.



Source: Bureau of Economic Analysis (BEA). Dashed lines represent change in data collection methods. Prior to 2001, government statistic agencies organized industry information according to the Standard Industrial Classification (SIC) system; after 2001 the North American Industrial Classification System (NAICS) was used.

statewide.[9] Manufacturing jobs in Bonner County in 2015 accounted for 16.9 percent of employment. The average annual wages in manufacturing ($44,448) were 31.5 percent higher than the average annual wages for all jobs.[10] Since 2002, non-timber manufacturing jobs have increased as a share of all jobs. Manufacturing jobs have also enjoyed the largest net change in compensation.[11]

Manufacturing Diversification in Bonner County. The yellow line represents earnings in all manufacturing, including timber- and non-timber related products. The green line represents that portion of manufacturing that is related to timber. Manufacturing was dominated by timber through the 1980s, but has since diversified beyond timber. Manufacturing earnings have been rising since the 2000s.



Source: Bureau of Economic Analysis (BEA). Gray area represents change in data collection methods from the Standard Industrial Classification (SIC) system through 2000 to the North American Industrial Classification System (NAICS). See Methods in Appendix A for details.

Diversification of Bonner County's economy has led to an increase in high-wage service jobs, especially in the professional and technical services sector. Professional and technical services sector jobs are not generally as common in rural areas, yet Bonner County has managed to attract entrepreneurs by promoting a high quality of life and a business-friendly climate. This sector is small but growing. Jobs in this industry are high-paying and have seen the fourth-highest net increase in compensation during the last decade.[7]

Bonner County has many natural amenities: Lake Pend d'Oreille—the largest lake in Idaho—offers camping and water sports. Four nearby rivers and other lakes offer a variety of different paddling options, and the Selkirk Mountains offer unique driving loops and hiking and biking opportunities, as well as world-class skiing.[12] The county is known for its ski area, Schweitzer Mountain Resort, the largest ski area in Idaho.

The ability of natural amenities to attract businesses has been well documented, especially the ability to attract knowledge workers (such as software engineers, physicians, engineers, scientists, lawyers, and academics) and retirees who are not bound to specific locations.[13] Several lines of evidence point to the possibility that this "amenity migration" concept may be working in Bonner County. Non-labor income is on the rise in Bonner County, and recently it surpassed labor income in terms of total personal income in the county.[14] This can be a sign that a place is attractive to live and retire in. Amenities may also encourage Bonner County's homegrown businesses to stay put. Between 2000 and 2013, most of the new business in Bonner County came from new start-ups created in the county or from businesses in the community that were expanding.[15] When the catalog retailer Coldwater Creek closed up shop in Sandpoint in 2014, causing more than 300 jobs to vanish, former employees commented that they were determined to stay in the area because of the "striking scenery, outdoor recreation, and small-town charm."[16]

Credit for attracting businesses and diversifying the local economy should be given to leaders in the Bonner County community. Individuals and groups such as the City of Sandpoint, the Bonner County Economic Development Corporation (BCEDC), and the Greater Sandpoint Chamber of Commerce have committed time, expertise, and money to build an engaged and collaborative government, business, and nonprofit community. For example, the BCEDC and Chamber have hosted the What's Happening Up North Economic Summit for the past two years, a free collaborative workshop to share ideas about growing healthy economies and communities in northern Idaho.[17] The workshop focuses on pressing issues such as workforce development and retention, education, and how to manage growth. These efforts allow the community to identify common economic development needs and help local governments, business leaders, and nonprofits collaborate on the area's highest priorities.

Collaboration among governments, businesses, and nonprofits has yielded tangible economic development benefits. For example, when Tamarack Aerospace was considering leaving the Sandpoint area, the community upgraded the runway and secured a grant to build a new hangar. Members of the community teamed up to build a maker space called MakerPoint Studios where students and budding entrepreneurs have access to high-tech manufacturing equipment for a small monthly fee. The Chamber sponsors courses in leadership development for young professionals.

The schools and several nonprofits work to connect high school students to careers in the area through formal apprentice programs. The Idaho Pathways to Early Career High School (PTECH) program bridges the divide between the growing requirement for employees in Idaho to possess a technical or advanced degree (61 percent of jobs may have this kind of requirement by 2018[18]) and the fact that many high school graduates in Bonner County are not on an academic track to fulfill those requirements. The program pairs high school students with professional career coaches who help the students define a clear path to training and education that will ultimately result in a fulfilling, well-paying job.[19] The PTECH program is designed to meet the needs of rural students; much of the population of Bonner County does not live within an incorporated city.

The City of Sandpoint, the Sandpoint Urban Renewal Agency, and Bonner County teamed up in 2015 to plan a high-speed, fiber optic internet backbone in the middle of the city. The plan is to first connect

government networks to the fiber, then to connect many businesses in the downtown area to the high-capacity backbone, and eventually connect many homes throughout Sandpoint. Phase One of the construction was completed in summer of 2016 and the city hopes to loop other areas into the system as resources allow. The BCEDC highlights this project on its website. This will likely become an important promotional asset for the city of Sandpoint as it tries to entice new manufacturing and high-tech companies to settle in the area.

Continued Challenges

Although Bonner County appears to be on a trajectory that will make its economy sustainable despite the shrinking relative contribution of the timber industry, it still has many challenges ahead. The county is remote and access to markets is therefore limited.

As Bonner County's population increases and the county becomes more of a retirement destination, housing affordability most likely will become an issue. Keeping young entrepreneurs in the community will be somewhat dependent on the ability of the county to provide affordable housing options.

To maintain growth in the economic sectors that are proving so fruitful for Bonner County now, a continuing supply of well-educated workers will be required. The county has begun to address these issues by embracing special training programs such as PTECH and other apprenticeship-style programs, but more such efforts will probably be required.

Average earnings per job still are not what they were in the 1970s and 1980s. Though the influx of higher-paying manufacturing and professional services jobs has begun to help with the recovery of personal income, wages are still not comparable to what they were during the height of the timber years.

Keys to Bonner County's Transition

Three primary factors contributed to Bonner County's transition from a timber-dependent economy.

- Natural amenities and a high quality of life. Bonner County has capitalized on its natural amenities to promote tourism and recreation opportunities. These amenities and recreation lifestyle are important factors in retaining and attracting businesses and families.

- Flexibility and adaptability to diversify and welcome new economic opportunities. Bonner County has had success encouraging high-tech industries and light manufacturing to locate and stay in the county. These businesses provide desirable, high-wage jobs that provide a new economic focus and direction for the community.

- Engaged, collaborative planning. Bonner County has an active and collaborative planning, business, and nonprofit community that is creating and capitalizing on a shared vision and goals for the community's future, exemplified by the What's Happening Up North workshops. These efforts have led to new funding and projects, including improvement to local airports, construction of high-tech facilities such as "clean rooms," improvement of broadband capacity, and development of local training programs that have paid returns in new jobs, income, and robust relationships and professional networks that will continue to benefit the county.

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IV. Case Study 2: Mason County, Washington

Mason County's transition from timber dependency can be attributed to at least three factors: 1) connectivity to major metropolitan markets; 2) natural amenities that help attract new residents and businesses, retirees, and tourists; and 3) flexibility and adaptability to diversify and welcome new economic opportunities.

Timber History

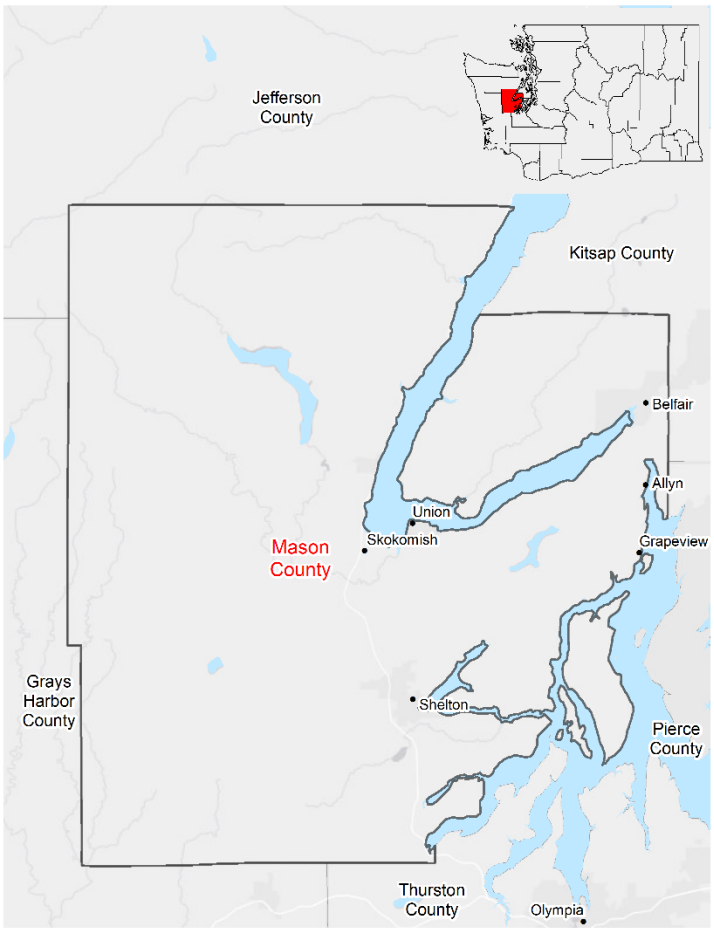
Wedged between the mountains of Washington's Olympic Peninsula and the waters of Puget Sound, Mason County (pop. 62,198 in 2016) is blanketed in Pacific Northwest coniferous forests. Timber has been harvested in Mason County for more than 150 years and logging culture runs deep in its small towns. In 1980, one in four jobs was in manufacturing (including forest products, which represented more than 80% of manufacturing), which was the biggest employment sector in the county with more than 2,700 jobs.[1] In 1980, the average earning per job in the county was $43,757.[2]

The northwestern quarter of the 1,051-square-mile county includes parts of Olympic National Park, more than 125,000 acres of Olympic National Forest, and more than 55,000 acres of state forest. In 1986, gross receipts from commercial activities on the Olympic National Forest (primarily from timber harvest) exceeded $59 million,[3] a portion of which flowed through Mason County.

The timber slowdown of the 1980s and 1990s hit the Olympic Peninsula hard. By 2015 the number of manufacturing jobs in Mason County had declined to about 1,400, representing just one in 14 jobs in the county.[4] Between 1998 and 2015, logging and sawmill jobs and other related manufacturing jobs all declined by more than 33 percent.[5] Gross annual receipts from commercial activities on the National Forest fell to about $2 million.[6] U.S. Forest Service revenue-sharing payments to Mason County declined from a high of $1,588,601 in FY 1989 to $380,964 in FY 2015.[7]

In 2015 the Simpson Lumber Company sawmill—a dominant business in Shelton and the region for almost 100 years—closed its doors and laid off most of its 270 remaining employees.[8]

Mason County, Washington



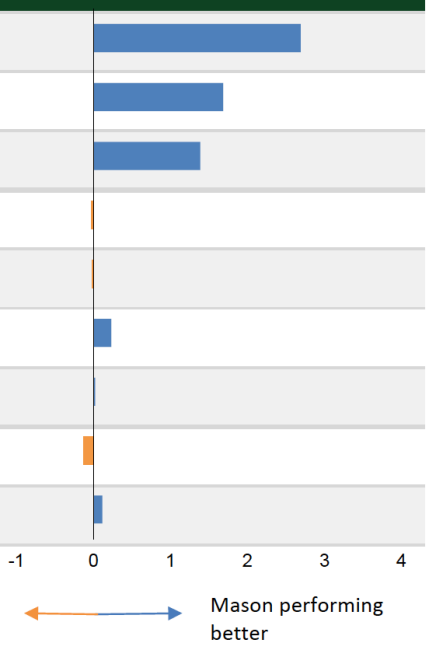
Economic Transition

Mason County has transitioned from a timber-dependent community to a more diversified economy during the past 30 years. Compared to other formerly timber-dependent communities, Mason County is performing above average in several measures, including growth in population, employment, personal

income, and median household income. This performance can be linked to the county's proximity to metropolitan areas, its natural amenities, and its diverse economy.

Key socioeconomic benchmark indicators for Mason County compared to the other 24 formerly timber-dependent counties.

	Indicators	Mason County, WA	Timber Dependent Counties
Trends	Population, % change, 1970-2015	191.3%	51.8%
	Employment % change, 1970-2015	185.5%	69.1%
	Personal Income, % change, 1970-2015	361.4%	151.4%
Prosperity	Average Earnings per Job, 2015	$42,648	$44,010
	Per Capita Income, 2015	$37,099	$37,618
	Median Household Income, 2015	$50,406	$40,866
	Adults with a College Degree, 2015	18%	17%
Stress	Unemployment Rate, 2015	7.8%	6.9%
	Families in Poverty, 2015	10.8%	12.2%



Mason County's success as a timber-exporter was at least partially based on its proximity to markets and transportation hubs of more urban areas. Today, nearby metro areas can be a key factor for the county's future. The county seat of Shelton lies just 22 miles north of the state capital (Olympia) and around the southern end of Puget Sound from Tacoma and Seattle—50 and 80 miles away, respectively.

Beautiful mountain scenery, picturesque bays and inlets, and more than 30 freshwater lakes for fishing and recreation have drawn people for decades from nearby cities to Mason County. On the saltwater side, Mason County has 25 public clam and oyster beaches. These features draw tourists and new residents, including part-time residents—more than one in five county residences are second homes.[9]

Average earnings per job in Mason County dropped from more than $48,000 in the late 1970s to a low of $37,000 in 1987, but have rebounded slowly to about $42,600 in 2015—a positive indicator of economic transition and adaptation.[10] During the same time, per capita income of county residents has risen steadily (from $27,000 in 1980 to $37,099 in 2015).[11] The rise of per capita income may be due to two factors: income earned outside the county by commuters to neighboring counties, and non-labor income (which includes investments, and medical and retirement income such as Medicare and Social Security).

Nearby cities provide employment opportunities for Mason County residents, a high proportion of whom now commute outside the county; Olympia and Seattle are the top commute destinations.[12] More than 17

percent of total personal income of county residents was earned outside the county in 2015.[13] (A different study places the estimate higher, at more than 50 percent.[14]) In general across the West, counties connected to metropolitan markets fare better in economic and population growth.[15]

Personal income in Mason County has steadily increased by more than 40 percent since 1970 (in real terms). Sixty-one percent of the change is attributable to an increase in non-labor income.[16] In 2015, 49.7 percent of all personal income was derived from non-labor sources. These include investments, interest, and rent (21 percent of personal income); Social Security and Medicare (17.6 percent); Medicaid, welfare, and unemployment (7.5 percent), and veterans benefits, workers comp, and other payments (3.7%).[17] This compares to 31 percent of personal income in the county derived from non-labor sources in 1970. Between 1970 and 2015, age-related payments increased 1,280 percent which reflects an aging population and the presence of retirees in the county.

Logging and forest products manufacturing are still important components of the county economy. Sierra Pacific Industries, a northern California firm, bought Simpson Lumber operations in 2015[18] and recently reopened a sawmill in Shelton. More than 96 million board feet of timber were harvested in Mason County in 2015, primarily from private and state lands.[19]

But Mason County's economy has diversified beyond timber, and the strongest sectors in recent years have been health care, government employment, accommodation and food services, and retail trade. Its largest employers[20] include:

- Little Creek Casino and Hotel (800 employees). The Skokomish and Squaxin Island tribes each have small land holdings and a casino in Mason County. The Squaxin Island Tribe's Little Creek Casino opened in 1995 and is one of the largest employers in the county. A resort hotel was added in 2003, an event center was added in 2006, the hotel was expanded in 2007, and a golf course was opened in 2011. The tribal businesses draw visitors to the county, but because tribes are sovereign nations, they don't contribute to Mason County's tax base although they do pay federal taxes.[21]
- The Washington Corrections Center (640 employees) expanded in the 1980s which helped offset losses in the forest industry.[22]
- Mason General Hospital (625 employees) has 25 beds and in 2013 completed a 20,000-square-foot surgery wing and lab.[23]
- Shelton School District (624 employees) is growing to serve the expanding population.
- Taylor Shellfish (600 employees) grows and harvests many kinds of seafood in Puget Sound including oysters, mussels, geoduck, and clams. Shellfish production and aquaculture have been identified as a potential growth sector in Mason County.[24]

Since 2012, marijuana production, processing, and retail sales also have contributed significantly to the Mason County economy. The county has 26 crop producers and six retailers. By 2017, monthly tax revenues were almost $1 million and excise taxes on producers exceeded $3 million.[25] Given Washington's legalized medical and recreational marijuana industry and the potential for growing industrial hemp, marijuana production is expected to continue to be an economic driver for Mason County.

The services sector has provided between 70 and 80 percent of total jobs in Mason County since 1998.[26] Within services, retail trade has consistently been the major sector followed by health care and social assistance. Services represented at least 44 percent of employment in Mason County in 2016. The average annual wage for this sector is $28,513.[27]

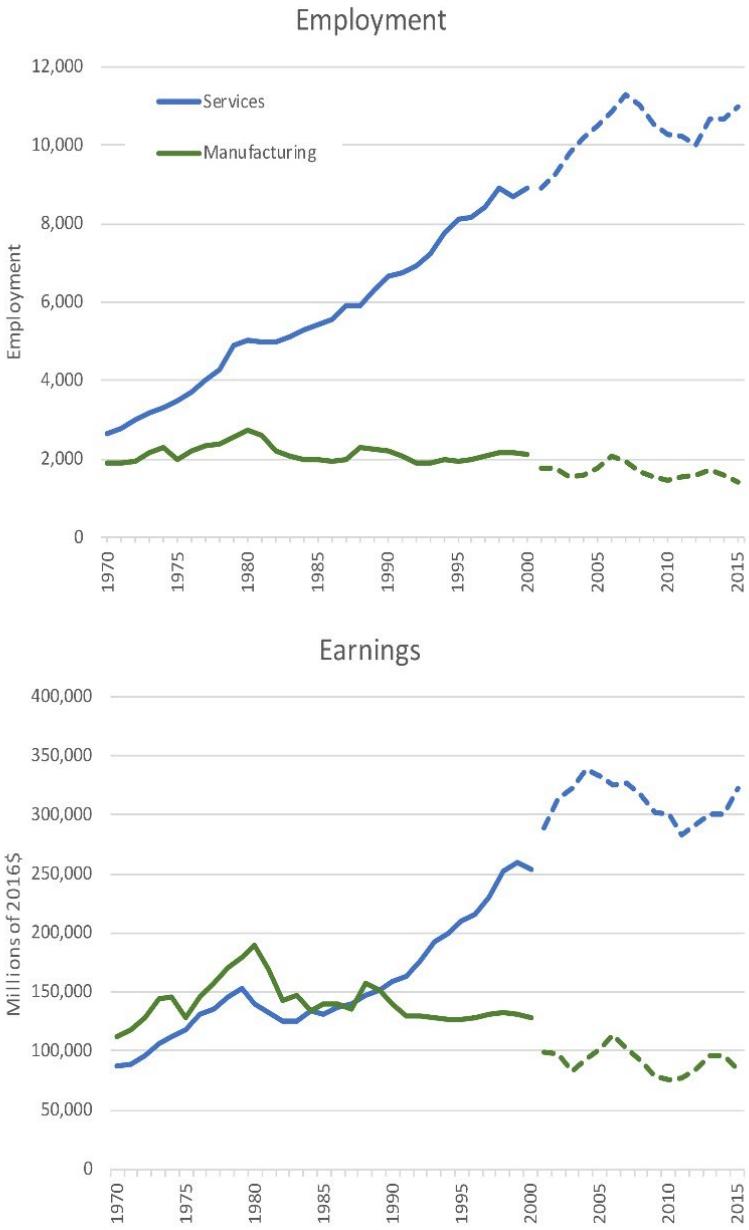
Continued Challenges

Like many rural counties in the West, Mason County faces ongoing challenges of reductions in natural resource extraction businesses, a large commuting workforce, and declining federal county payments.[28] When a large percentage of employed people commutes out of the county every day, the community's social fabric and cohesion can be strained. On the economic side, commuters may spend significant amounts of their paychecks outside Mason County.

Non-labor income has become a larger factor in the Mason County economy. This can be a positive development when it represents the investment or rental income of well-to-do residents or Social Security and Medicare income of retirees who have settled in the county. This seems to be the case in Mason County although non-labor hardship payments such as unemployment and welfare have also grown in the past two decades. But the increasing amount of non-labor income also hints at social changes in a community that was once a logging- and manufacturing-based company town. Integrating new people and ideas into an economy is challenging in any small town.

Mason County has had an active Economic Development Council since 1983. With a light industrial park, an airport, and several water ports on Puget

Mason County employment and earnings in manufacturing as compared to services, 1970-2015. Manufacturing was dominated by lumber and wood products from 1970-1989.



Source: Bureau of Economic Analysis (BEA). Dashed lines represent change in data collection methods. Prior to 2001, government statistic agencies organized industry information according to the Standard Industrial Classification (SIC) system; after 2001 the North American Industrial Classification System (NAICS) was used.

Sound, the county is taking advantage of opportunities to diversify. A draft economic and demographic profile contracted by Mason County[29] suggests that the county should consider further investment in infrastructure (cell phone coverage and internet access, roads, water quality), expansion of the shellfish industry, and continued marketing to promote Mason County as a vacation destination and business center. Downtown revitalization and improved access to health care and social services are also on the list of considerations.

Slightly more than 17 percent of Mason County residents (compared to 13.3 percent statewide) were below the poverty level in 2015.[30] However, unemployment has dropped from a recent high of 11.7 percent in 2011 to 7.8 percent in 2016.[31] (Statewide, unemployment dropped from 9.3 percent to 5.4 percent in the same time period.) Unemployment in Mason County dropped further to less than 6 percent in August 2017.[32]

Keys to Mason County's Transition

Three primary factors contributed to Mason County's transition from a timber-dependent economy:

- Connectivity to major metropolitan markets. Labor force commuting to nearby Olympia, Seattle, and Tacoma is an important driver in the county's economy that helps to maintain per capita income levels as workers have more opportunities in the regional economy. Connectivity to major metropolitan areas is associated with faster growth and higher wages across the West.[33]

- Natural amenities. The natural beauty of Mason County draws people from throughout the region and provides recreational opportunities from fishing, hunting, and camping to sailing and clamming. Tourism and recreation generates seasonal and often low-wage jobs, but also can help attract and retain families and businesses that want locate in small towns and near natural amenities, leading to a growing and diversified economy.

- Flexibility and adaptability to diversify and welcome new economic opportunities. While timber continues to play a role in the county's economy and cultural identity, county officials have taken advantage of opportunities to diversify the economy. The state prison built in the 1960s was expanded with help from the state after the timber downturn in the 1980s. A small county hospital established in the 1960s has grown to comprise 12 clinics and a critical access hospital. A tribal casino now includes a resort hotel and golf course that attracts people from outside the county. Today, the county is updating its Comprehensive Plan based on demographic and economic trends to better identify and pursue economic development opportunities.

Acknowledgments

Personal communication, Jim Hargrove, forestry specialist and former Washington State Senator.

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Case Study 3: Skamania County, Washington

Skamania County's transition was driven by at least three factors: 1) natural amenities in the Columbia River Gorge that attract entrepreneurs, retirees, and tourists; 2) flexibility and adaptability to diversify and welcome new economic opportunities; and 3) connectivity to major markets in the nearby Portland, Oregon metropolitan region.

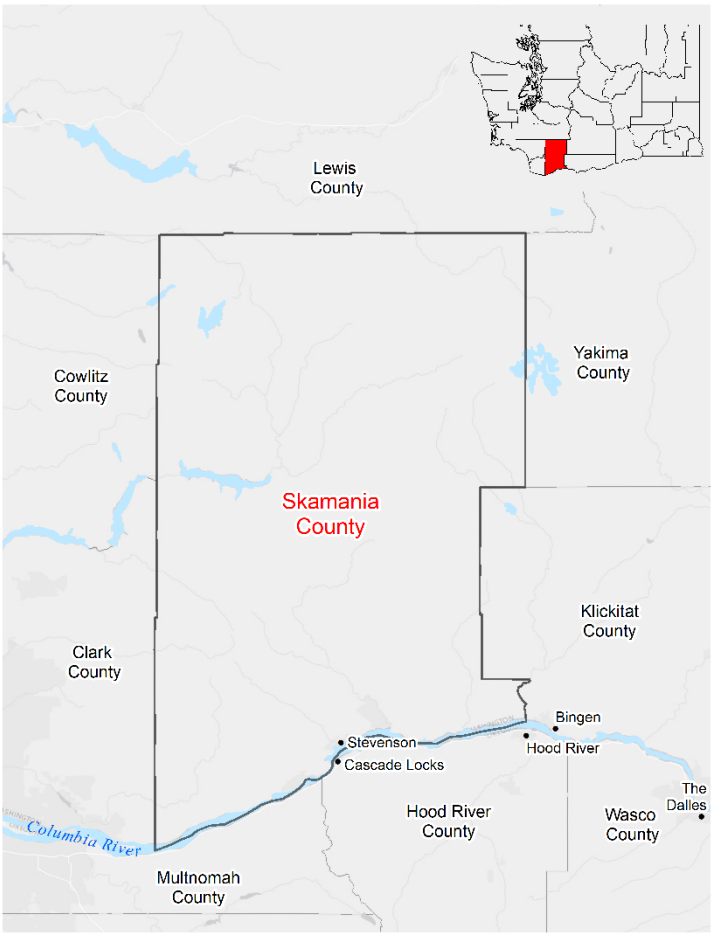
Timber History

Skamania County, Washington connects to the greater Portland, Oregon metropolitan area at its southwestern corner, Mount Saint Helens to the north, and the Columbia River Gorge to the south and east. Despite a small population of roughly 11,000, the county is considered "metro" under the U.S. Census designations because of its economic ties and labor force commuting to the greater Portland area—less than one hour from the county seat of Stevenson.

At just more than one million acres in size, 80 percent of Skamania County is federal land, and the county is 90 percent forested. In the 1970s and 1980s, timber dominated the county's economy both in terms of employment (averaging 30 percent) and earnings (41 percent).

Skamania County transitioned from a timber-dependent economy in the 1980s and 1990s. In 1992, the Stevenson Co-Ply mill closed.[1] By 2014, timber accounted for just 11 percent of jobs and one percent of all earnings,[2] a decline of more than $47 million in earnings.[3] Gross receipts from timber production on the Gifford Pinchot National Forest dropped from more than $200 million in the 1980s to $2.1 million in 2016.[4]

Skamania County, Washington



Economic Transition

Compared to other formerly timber-dependent communities in the West, Skamania County has performed above average in many measures, including growth in population and personal income, families in poverty, educational attainment, and median household income. (See benchmark indicators below). This performance can be linked to Skamania County's geography, including its proximity to a metropolitan area and its natural amenities.

A key driver of Skamania County's economic transition is related to its development as a regional tourist destination. In 1986, the Columbia River Gorge National Scenic Area Act was passed by Congress and signed by President Reagan. [5] Through unique collaborations across county, state, and federal governments, the Act prioritizes both conservation and economic

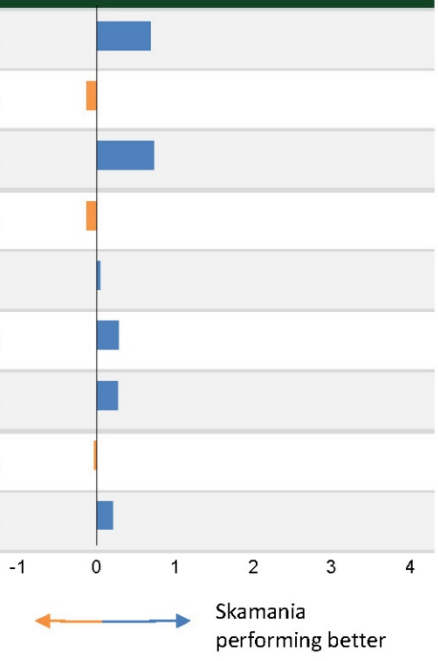
development for the Gorge, specifically authorizing and subsidizing the creation of a lodge in Washington state. In 1993, the Skamania Lodge opened to the public, which created nearly as many new jobs as were lost in the timber industry in Skamania County. However, average earnings are still lower than they were when timber was at its peak.[6] Skamania Lodge has since expanded and become a regional destination, attracting tourists as well as conventions and conferences. Average earnings per job are lower in Skamania County than the median for other timber-dependent communities and declined from $43,647 to $38,156.[7]

With the decline of timber, many Skamania County residents began commuting to the greater Portland area for work. In 2015, inflow of earnings from other counties represented 67 percent of total labor earnings in the county.[8] Most of the population growth in the county is concentrated in the southwest corner, closest to Portland.[9] Tax advantages and employment law may enhance the advantages of living in Washington and working in Oregon.[10] Commuting poses its own challenges with residents less able to participate in community life.

Within Skamania County, jobs are growing in government, services, and retail. Earnings in services are rising, but have only recently replaced the lost earnings in manufacturing. Average earnings per job are lower in Skamania County than the median for other timber-dependent communities. Earnings in manufacturing—historically dominated by lumber and wood products[11]—have dropped from a high of 41 percent of personal income to less than 10 percent.

Key socioeconomic benchmark indicators for Skamania County compared to the other 24 formerly timber-dependent counties.

	Indicators	Skamania County, WA	Timber Dependent Counties
Trends	Population, % change, 1970-2015	94.4%	55.8%
	Employment % change, 1970-2015	62.8%	72.1%
	Personal Income, % change, 1970-2015	271.6%	157.2%
Prosperity	Average Earnings per Job, 2015	$38,156	$43,994
	Per Capita Income, 2015	$39,228	$37,571
	Median Household Income, 2015	$52,374	$40,866
	Adults with a College Degree, 2015	22%	17%
Stress	Unemployment Rate, 2015	7.2%	7.0%
	Families in Poverty, 2015	9.7%	12.2%



Job growth has been largely driven by Skamania Lodge, but also by small, niche manufacturing and professional services. The natural resources of the Gorge, the region's outdoor recreation opportunities, and port facilities on the Columbia River have helped attract and retain several businesses. For example, Slingshot Sports[12]—manufacturer of kiteboarding, windsurfing, and other equipment—opened its warehouse and marketing office in North Bonneville, capitalizing on the recreational economy of the Columbia River Gorge region. Silver Star Industries, a manufacturer of store interiors, employs nearly 200 people. [13] A former hot springs resort is reopening as a residential addiction recovery center and will employ low-wage kitchen and housekeeping staff, as well as professional medical staff. The natural resources and quality of life have helped attract and retain these businesses and their staff.

Continued Challenges

Skamania County government faces ongoing challenges because of the lack of timber revenue and changes in federal land payments to counties. With extensive federal land but a decline in timber receipts, the county went from receiving federal payments worth nearly $14 million in 1992 to less than $4 million in 2014—a loss

Skamania County employment and earnings in manufacturing as compared to services, 1970-2015. Manufacturing was dominated by lumber and wood products from 1970-1989.

Source: Bureau of Economic Analysis (BEA). Dashed lines represent change in data collection methods. Prior to 2001, government statistic agencies organized industry information according to the Standard Industrial Classification (SIC) system; after 2001 the North American Industrial Classification System (NAICS) was used.

representing more than one-quarter of the county budget.[14] The decline in revenue affects schools, transportation infrastructure, and other critical county services.[15] In 2015, the Skamania County Commission declared a state of emergency over federal mismanagement of forest lands, citing the lack of federal transfer payments and increasing fire danger from lack of timber harvest. [16]

Today, collaboration among a diverse group of partners—including timber companies, conservation organizations, and the U.S. Forest Service—is working to restore timber operations in the county to improve forest health and the regional economy.[17] In recent years, timber cuts on the Gifford-Pinchot National Forest have increased, and the one local sawmill remaining in the county just invested several million dollars in new equipment to improve innovation, efficiency, and adaptability in the changing market. Maintaining a timber workforce and infrastructure also can leverage emerging opportunities in the restoration economy, including restoring historic fire regimes in previously logged forests and restoring watersheds to supply clean water to communities and to improve fisheries and wildlife habitat.

Keys to Skamania County's Transition

Driven by its geography, three primary factors contributed to Skamania County's transition from a timber-dependent economy.

- Natural amenities. The natural beauty and outdoor recreation opportunities of the Columbia River Gorge give Skamania County a unique advantage. The creation of the Skamania Lodge helped jumpstart the county's recreation economy and other tourist- and recreation-related industries followed. Leveraging natural resources into economic drivers beyond tourism and recreation and into business expansion and retention is an advantage many communities can replicate.

- Flexibility and adaptability to diversify and welcome new economic opportunities. In Skamania County, fortuitous federal support for the creation of the Skamania Lodge helped the county transition; this growth subsequently helped attract new businesses and residents. New, niche industries that couldn't have been anticipated during timber's peak are growing. New collaborations around federal land management are helping revive forest industries with innovative, adaptable equipment.

- Connectivity to major metropolitan markets. Labor force commuting to nearby Portland, Oregon has become an important driver in the county's economy and contributes to overall growth. Connections to major markets also open opportunities for local businesses and workers to grow the economy in Skamania County.

Lessons from Skamania's Neighbor, Klickitat County

Klickitat County, Washington—Skamania County's eastern neighbor—provides additional, unique insights into transition from timber dependence.

Like Skamania, Klickitat County experienced decline in timber. From 1970 to 1989, labor earnings from timber represented 20 percent of total earnings, but by the 2000s, timber represented only two percent of total earnings in the county. Unlike Skamania County, average annual wages did not fall off as sharply following the decline of timber. Klickitat County is doing relatively well in terms of average wages, population growth, and educational attainment compared to other formerly timber-dependent counties (see table on page 3).

Part of Klickitat County's success is due to creative planning by local officials, persistence of local entrepreneurs and innovators, and the county's geography. Highlights from Klickitat County's transition include:

Natural amenities and high quality of life. The geography, climate, and natural amenities of the Columbia River Gorge contribute to a high quality of life, which helps to attract and retain businesses and families. For example, the aerospace start-up Insitu was founded in 1994 in the small town of Bingen in Klickitat County. Insitu makes Unmanned Aircraft Systems (UAS), an industry that couldn't have been anticipated during timber's reign. Going from "garage to global," the company today employs hundreds in Klickitat County.[A] Despite proposals to move to other states, Insitu remains in Bingen and is committed to the Columbia Gorge community.[B] Whether due to state tax benefits or the quality of life in the county, Klickitat's natural resources and high quality of life are a factor in Insitu's success.

Embracing new opportunity and being adaptable. The climate of Klickitat County also lends itself to viviculture, but the industry didn't take off until the mid-1990s. By 2006 there were as many as 17 wineries in the county; tasting room tours can draw hundreds of visitors on warm summer weekends.[C] The increase in viviculture has revved up the tourist base and attracted new residents.[D]

Despite its decline, timber remains an important component of Klickitat County's culture and diverse economic portfolio. The SDS Lumber Company and Stevenson Land Company use timber from 70,000 acres of private timberland to manufacture high-quality lumber products in a facility that allows for innovation and adaptations in the manufacturing process.[E]

Active community planning and governance. Klickitat County Commissioners have taken an active role in planning for economic development and pursuing new economic opportunities. Faced with the decommissioning of its own landfill, the county won the bid to host the new high-tech, power-producing Roosevelt Regional Landfill in the early 1990s. It provides living-wage jobs and produces 20 megawatts of power.[F]

The county also took action after several wind energy proposals failed by streamlining the environmental review process for energy development through the Washington State Environmental Policy Act and creating an "Energy Overlay Zone."[G] This resulted in the development of 14 different wind power projects producing 1,200 MW of energy per year. Energy projects bring in tax revenue for the county, generate lease and royalty income for landowners, and produce permanent jobs both directly related to wind farms and from the "multiplier effect" of new and additional services needed for energy employees.[H]

[A] https://insitu.com/
[B] https://www.seattletimes.com/business/boeing-unit-insitu-to-stay-in-bingen/
[C] http://www.klickitatpud.com/Documents/Ruralite/2006/0611page45.pdf
[D] https://pilotscholars.up.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1020&context=bus_facpubs
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[G] https://www.klickitatcounty.org/DocumentCenter/Home/View/367
[H] https://pilotscholars.up.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1020&context=bus_facpubs

Acknowledgments
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[11] Lumber and wood products manufacturing was more than 90 percent of all manufacturing personal income from 1969-1989.
[12] Slingshot Sports. Hood River, OR. http://www.slingshotsports.com
[13] Silver Star Industries. North Bonneville, WA. https://www.silverstarindustries.com
[14] Headwaters Economics. 2016. County Payments: History, Context, Policy. https://headwaterseconomics.org/dataviz/county-payments/
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Conclusions: Opportunities for Economic Transition

At the regional scale, job losses in timber have been more than offset by growth in other sectors. For example, the Pacific Northwest added 1.3 million jobs during the 1990s, a period marked by major losses in timber employment. (Roughly 30,000 timber jobs were lost during this time). But job creation has not been evenly distributed across the West, and while some formerly timber-dependent communities have recovered, others have experienced persistent hardship.

The economic performance of historically timber-dependent counties in the West varies substantially. Some are growing, some are holding steady, and others continue to struggle after the loss of a major employer.

The economic performance of historically timber-dependent counties is similar to the performance of non-timber-dependent communities. Performance is shaped more by current challenges and opportunities in the regional economy affecting all types of communities than it is by changes in the timber industry alone.

Many western counties face difficult challenges including the loss of relatively higher-wage manufacturing jobs, including timber jobs, and the increased concentration of jobs in metropolitan areas. Strategies and opportunities exist, however, for economic transition and growth in these communities. As the three case studies illustrate, a transition to a new, more diversified economy can be significantly aided through a variety of inherent characteristics (e.g., proximity to major metropolitan markets and natural amenities) and efforts of community leaders (e.g., an engaged and collaborative planning process, and strategies that embrace flexibility and adaptability to leverage unique advantages).

Western communities that more successfully navigated the loss of timber-related jobs and income employed one or more of the strategies outlined below to help improve local economic performance:

1. **Leveraging natural amenities.** Small towns with beautiful landscapes and access to outdoor recreation have a competitive advantage. Natural amenities may initially attract tourism and associated seasonal and low-wage jobs, but assets that attract tourists may also attract new residents, retirees, and entrepreneurs that can help diversify the economy. Tourism can jump-start the economy, leading to business expansion and retention in higher-wage sectors. Communities can pursue recreation and conservation as economic development strategies.

2. **Demonstrating flexibility and adaptability to embrace new economic opportunities.** New opportunities in manufacturing, forest and watershed restoration, health care and retirement-related services, and tourism and recreation can diversify and grow rural economies. Identifying where these businesses and opportunities already exist and pursuing strategies to support local entrepreneurs is central to economic development and successful transitions. Adapting to new opportunities and technology in timber manufacturing and forest restoration can help communities continue the timber legacy.

3. **Actively engaging in collaborative community planning and governance.** Evidence from formerly timber-dependent communities shows that economic diversity results from deliberate efforts on the part of community leaders to build relationships and partnerships among government, businesses, and nonprofit organizations locally and with state and regional partners. Bonner County, Idaho is a good example of how these efforts allow communities to be strategic and effective in attracting funding and completing projects including upgrading infrastructure required by companies, offering workforce development and retention programs, helping remove

barriers such as housing shortages, and creating or protecting amenities that result in a good quality of life for workers and their families.

4. **Taking advantage of connections to metropolitan markets**. Many historically timber-dependent counties are within commuting distance of major urban areas (for example, with residents of Mason County, Washington commuting to neighboring Olympia for work). Acceptable commute times are growing because people want to live in communities that have natural amenities. Counties that have the geographic advantage of natural beauty and access to recreation can leverage opportunities by expanding connections—via air travel, highways, public transit, and internet broadband—to major markets.

In some of the counties studied the timber industry continues to play a role in forest management and provides good-paying local jobs. The case studies provide insights into how specific strategies can help counties bring new economic opportunities to residents—especially in areas historically dependent on timber or other commodities. Today, a more diverse economy can provide economic opportunity and long-term stability to these counties.

Appendix A: Methods

The report analyzed labor earnings in the timber sectors for all counties in the contiguous western United States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming) using data from the Bureau of Economic Analysis's Regional Economic Accounts. Some counties did not have sufficient disclosed earnings data to be considered in our analysis. Those counties are not displayed on maps or charts in this report.

The methods used by the Bureau of Economic Analysis (BEA) for classifying workers changed in 2001. Before 2001, BEA and other government statistical agencies categorized workers according to what type of product they produced in the Standard Industrial Classification system (SIC). Since 2001, the North American Industry Classification System (NAICS) is used and workers are grouped based on the activity in which they are primarily engaged.

Past Timber Earnings (1970-1989)
Past timber earnings were defined as the average of earnings across the period 1970-1989 for all years with disclosed data. The earnings used were summed from the following two SIC codes:

> Lumber and Wood Products (SIC 24-linecode 0413): "This major SIC group includes establishments engaged in cutting timber and pulpwood; merchant sawmills, lath mills, shingle mills, cooperage stock mills, planing mills, and plywood mills and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in manufacturing finished articles made entirely or mainly of wood or related materials."
>
> Paper and Allied Products (SIC 26-linecode 0465): "This major SIC group includes establishments primarily engaged in the manufacture of pulps from wood and other cellulose fibers, and from rags; the manufacture of paper and paperboard; and the manufacture of paper and paperboard into converted products, such as paper coated off the paper machine, paper bags, paper boxes, and envelopes. Also included are establishments primarily engaged in manufacturing bags of plastics film and sheet."

Current Timber Earnings (2001-2014)
Current timber earnings were defined as the average of earnings across the period 2001-2014 for all years with disclosed data. The earnings used were summed from the following three NAICS codes:

> Forestry and Logging (NAICS 113-linecode 0101): "Industries in the Forestry and Logging NAICS subsector grow and harvest timber on a long production cycle (i.e., of 10 years or more). Long production cycles use different production processes than short production cycles, which require more horticultural interventions prior to harvest, resulting in processes more similar to those found in the Crop Production subsector. Consequently, Christmas tree production and other production involving production cycles of less than 10 years, are classified in the Crop Production subsector. Industries in this subsector specialize in different stages of the production cycle. Reforestation requires production of seedlings in specialized nurseries. Timber production requires natural forest or suitable areas of land that are available for a long duration. The maturation time for timber depends upon the species of tree, the climatic conditions of the region, and the intended purpose of the timber. The harvesting of timber (except when done on an extremely small scale) requires specialized machinery unique to the industry. Establishments gathering forest products, such as gums, barks, balsam needles, rhizomes, fibers, Spanish moss, and ginseng and truffles, are also included in this subsector."

Wood Product Manufacturing (NAICS 321-linecode 0511): "Industries in the Wood Product Manufacturing NAICS subsector manufacture wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, manufactured homes (i.e., mobile home), and prefabricated wood buildings. The production processes of the Wood Product Manufacturing subsector include sawing, planing, shaping, laminating, and assembling of wood products starting from logs that are cut into bolts, or lumber that then may be further cut, or shaped by lathes or other shaping tools. The lumber or other transformed wood shapes may also be subsequently planed or smoothed, and assembled into finished products, such as wood containers. The Wood Product Manufacturing subsector includes establishments that make wood products from logs and bolts that are sawed and shaped, and establishments that purchase sawed lumber and make wood products. With the exception of sawmills and wood preservation establishments, the establishments are grouped into industries mainly based on the specific products manufactured."

Paper Manufacturing (NAICS 322-linecode 0537): "Industries in the Paper Manufacturing NAICS subsector make pulp, paper, or converted paper products. The manufacturing of these products is grouped together because they constitute a series of vertically connected processes. More than one is often carried out in a single establishment. There are essentially three activities. The manufacturing of pulp involves separating the cellulose fibers from other impurities in wood or used paper. The manufacturing of paper involves matting these fibers into a sheet. Converted paper products are made from paper and other materials by various cutting and shaping techniques and includes coating and laminating activities. The Paper Manufacturing subsector is subdivided into two industry groups, the first for the manufacturing of pulp and paper and the second for the manufacturing of converted paper products. Paper making is treated as the core activity of the subsector. Therefore, any establishment that makes paper (including paperboard), either alone or in combination with pulp manufacturing or paper converting, is classified as a paper or paperboard mill. Establishments that make pulp without making paper are classified as pulp mills. Pulp mills, paper mills and paperboard mills comprise the first industry group. Establishments that make products from purchased paper and other materials make up the second industry group, Converted Paper Product Manufacturing."


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