
A Profile of Timber and Wood Products

Selected Geographies:
Yellowstone County, MT

Benchmark Geographies:
U.S.

Produced by
Economic Profile System
EPS
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About the Economic Profile System (EPS)

EPS is a free, easy-to-use software application that produces detailed socioeconomic reports of counties, states, and regions, including custom aggregations.

EPS uses published statistics from federal data sources, including Bureau of Economic Analysis and Bureau of the Census, U.S. Department of Commerce; and Bureau of Labor Statistics, U.S. Department of Labor.

The Bureau of Land Management and Forest Service have made significant financial and intellectual contributions to the operation and content of EPS.

See headwaterseconomics.org/EPS for more information about the other tools and capabilities of EPS.

For technical questions, contact Patty Gude at eps@headwaterseconomics.org, or 406-599-7425.



headwaterseconomics.org

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



www.blm.gov

The Bureau of Land Management, an agency within the U.S. Department of the Interior, administers 249.8 million acres of America's public lands, located primarily in 12 Western States. It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.



www.fs.fed.us

The Forest Service, an agency of the U.S. Department of Agriculture, administers national forests and grasslands encompassing 193 million acres. The Forest Service's mission is to achieve quality land management under the "sustainable multiple-use management concept" to meet the diverse needs of people while protecting the resource. Significant intellectual, conceptual, and content contributions were provided by the following individuals: Dr. Pat Reed, Dr. Jessica Montag, Doug Smith, M.S., Fred Clark, M.S., Dr. Susan A. Winter, and Dr. Ashley Goldhor-Wilcock.

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Note to Users:

This is one of fourteen reports that can be created and downloaded from EPS Web. You may want to run another EPS report for either a different geography or topic. Topics include land use, demographics, specific industry sectors, the role of non-labor income, the wildland-urban interface, the role of amenities in economic development, and payments to county governments from federal lands. Throughout the reports, references to online resources are indicated in parentheses. These resources are provided as hyperlinks on each report's final page. The EPS reports are downloadable as Excel, PDF, and Word documents. For further information and to download reports, go to:

headwaterseconomics.org/eps

What industries comprise timber sectors?

This page describes the number of jobs (full and part-time) and the share of total jobs in the timber industry, broken out by three major categories: growing and harvesting, sawmills and paper mills, and wood products manufacturing.

Employment in Timber, 2013

	Yellowstone County, MT	U.S.
Total Private Employment	68,676	118,266,253
Timber	~111	785,763
Growing & Harvesting	~5	65,445
Forestry & Logging	~4	54,863
Support Activities for Forestry	~1	10,582
Sawmills & Paper Mills	63	247,922
Sawmills & Wood Preservation	0	76,040
Pulp, Paper, & Paperboard Mills	0	107,309
Veneer, Plywood, & Engineered Wood	63	64,573
Wood Products Manufacturing	~43	472,396
Other Wood Product Mfg.	~43	211,485
Converted Paper Product Mfg.	0	247,426
Non-Timber	~68,565	117,480,490

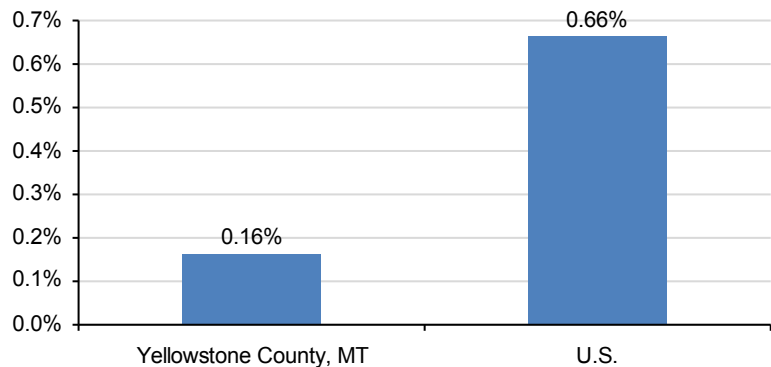
Percent of Total

Timber	~0.2%	0.7%
Growing & Harvesting	~0.0%	0.1%
Forestry & Logging	~0.0%	0.0%
Support Activities for Forestry	~0.0%	0.0%
Sawmills & Paper Mills	0.1%	0.2%
Sawmills & Wood Preservation	0.0%	0.1%
Pulp, Paper, & Paperboard Mills	0.0%	0.1%
Veneer, Plywood, & Engineered Wood	0.1%	0.1%
Wood Products Manufacturing	~0.1%	0.4%
Other Wood Product Mfg.	~0.1%	0.2%
Converted Paper Product Mfg.	0.0%	0.2%
Non-Timber	~99.8%	99.3%

This table does not include employment data for government, agriculture, railroads, or the self-employed because these are not reported by County Business Patterns. Estimates for data that were not disclosed are indicated with tildes (~).

- In 2013, U.S. had the largest percent of total timber employment (0.66%), and Yellowstone County, MT had the smallest (0.16%).

Percent of Total Private Employment in Timber, 2013



Study Guide and Supplemental Information

What industries comprise timber sectors?

What do we measure on this page?

This page describes the number of jobs (full and part-time) and the share of total jobs in the timber industry, broken out by three major categories: growing and harvesting, sawmills and paper mills, and wood products manufacturing.

Growing and Harvesting: These are jobs associated with growing and harvesting of trees on a long production cycle. It includes people employed in forest nurseries, as well as those involved in the cutting of trees and transportation of timber.

Sawmills and Paper Mills: These are jobs associated with converting logs into lumber, boards, poles, shingles, and similar milled products. It includes those involved in the conversion of logs and chips into pulp and paper as well as the creation of veneer and plywood.

Wood Products Manufacturing: These are jobs associated with manufacturing. It includes the production of corrugated boxes, gum and wood chemical products, cabinets, furniture, and other wood manufactured products.

Why is this Important?

To understand the potential impact of proposed land management practices, it is important to grasp the relative size of the timber industry and its components, how these have changed over time, and how local trends compare to trends in other geographies. Some important issues to consider are whether a proposed management action would stimulate growth or decline in the industry, how proposed actions relate to on-going trends shown in the data, whether some geographies would be affected more than others, and given the relative size of the industry if changes to it will affect the broader economy.

Methods

The terms "growing and harvesting," "sawmills and paper mills," and "woods products manufacturing" are not official North American Classification system (NAICS) terms. They are used in this report to differentiate major components of the timber and wood products industry, and to distinguish between different levels of value-added production. The first level of production is the growing and harvesting of trees. This is followed by milling. In some cases the milling results in a final product (e.g., paper), while in others it is an intermediary product (e.g., pulp). Some milled products go on to further value-added production (e.g., cabinets). This last level includes products that are typically manufactured after leaving a mill.

The three major timber and wood products categories are made up of the following NAICS codes:

Growing and Harvesting: forestry and logging (113), support activities for forestry (1153).

Sawmills and Paper Mills: sawmills and wood preservation (3211), pulp, paper, and paperboard mills (3221), veneer, plywood, and engineered wood product manufacturing (3212).

Wood Products Manufacturing: other wood product manufacturing (3219) and converted paper product manufacturing (3222).

Data on this page were obtained from County Business Patterns. We use this source because, compared to other sources, it has fewer data gaps (instances when the federal government will not release information to protect the confidentiality of individual businesses). It also includes both full and part-time employment. The disadvantage of County Business Patterns data is that they do not include employment in government, agriculture, railroads, or the self-employed and as a result under-count the size of industry sectors. Also, County Business Patterns data are based on mid-March employment and do not take into account seasonal fluctuations. For these reasons, the data are most useful for showing long-term trends, displaying differences between geographies, and showing the relationship between sectors over time.

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps. These values are indicated with tildes (~).

Additional Resources

For an online listing of all NAICS codes, see: naics.com/search.htm (1).

For additional online manuals and definitions of industry codes, see: bls.gov/bls/NAICS.htm (2) and census.gov/eos/www/naics (3).

Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at headwaterseconomics.org/eps (4).

Data Sources

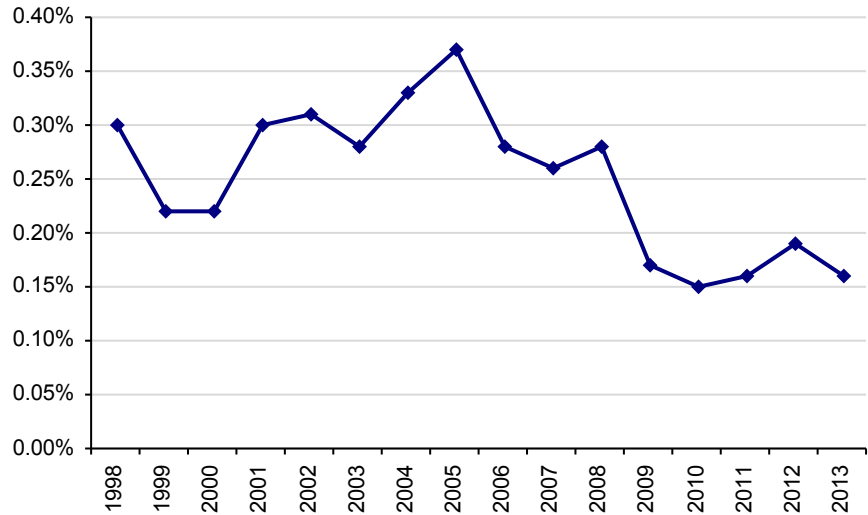
U.S. Department of Commerce. 2015. Census Bureau, County Business Patterns, Washington, D.C.

How has timber changed over time?

This page describes long-term trends in timber employment as a percent of all jobs and compares timber to non-timber employment over time.

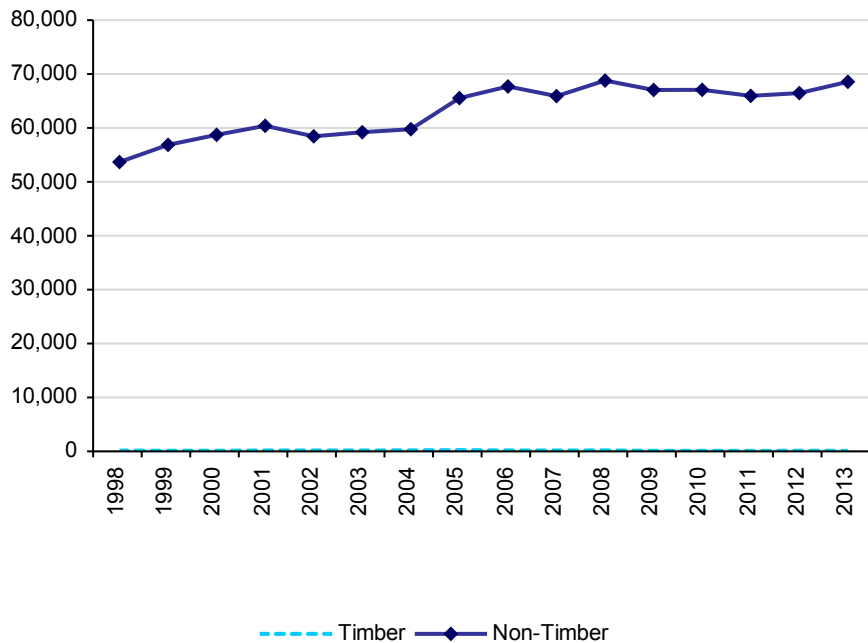
- In 1998, timber represented 0.3 percent of total employment. By 2013, timber represented 0.16 percent of total employment.

Percent of Total Private Employment in Timber, Yellowstone County, MT



- From 1998 to 2013, timber employment shrank from 164 to 111 jobs, a 32.3 percent decrease.
- From 1998 to 2013, non-timber employment grew from 53,683 to 68,565 jobs, a 27.7 percent increase.

Total Jobs in Timber and Non-Timber, Yellowstone County, MT



Study Guide and Supplemental Information

How has timber changed over time?

What do we measure on this page?

This page describes long-term trends in timber employment as a percent of all jobs and compares timber to non-timber employment over time.

Why is it important?

In some geographies the timber industry can be a significant driver in the economy. If it is, other sectors of the economy, as well as total employment and total personal income, will likely follow trends in the timber industry. It is important to know whether this is the case because if employment in other sectors fluctuate with the timber industry, then management actions on public lands may affect more than the timber industry itself. If, on the other hand, jobs in the rest of the economy are growing independent of trends in the timber industry, then management actions that potentially affect the timber industry may have impacts that are limited to that industry.

Methods

The figures on this page starts in 1998 because that is the year the Census Bureau (and County Business Patterns) shifted to using the new North American Industrial Classification System (NAICS).

Data on this page were obtained from County Business Patterns. We use this source because, compared to other sources, it has fewer data gaps (instances when the federal government will not release information to protect the confidentiality of individual businesses). It also includes both full and part-time employment. The disadvantage of County Business Patterns data is that they do not include employment in government, agriculture, railroads, or the self-employed and as a result under-count the size of industry sectors. Also, County Business Patterns data are based on mid-March employment and do not take into account seasonal fluctuations. For these reasons, the data are most useful for showing long-term trends, displaying differences between geographies, and showing the relationship between sectors over time.

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps.

Additional Resources

The Forest Service produced a number of publications that offer an overview of the timber industry, including how it has changed over time, as part of the Interim Update of the 2000 Renewable Resource Planning Act Assessment. See: fs.fed.us/research/rpa/pubs-supporting-interim-update-of-2000-rpa-assessment.shtml (5).

Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at headwaterseconomics.org/eps (4).

Data Sources

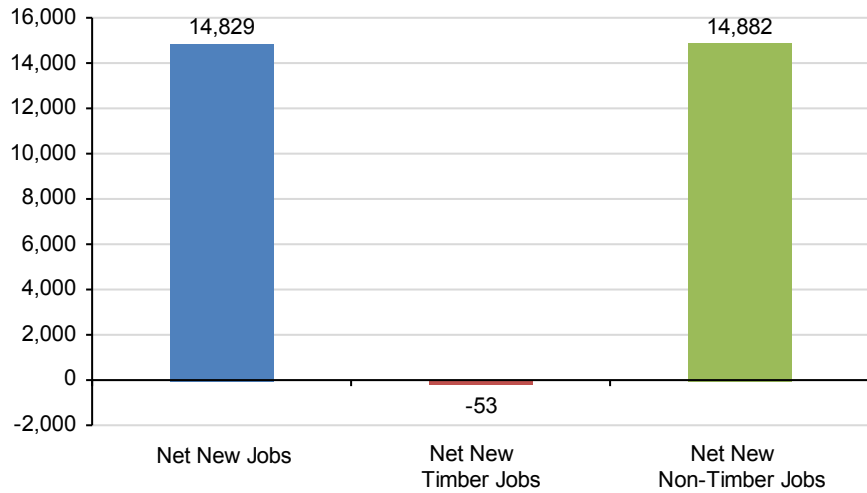
U.S. Department of Commerce. 2015. Census Bureau, County Business Patterns, Washington, D.C.

Which timber sectors are changing the fastest?

This page describes the change in timber jobs compared to the change in non-timber jobs and compares how employment in various timber sectors has changed over time.

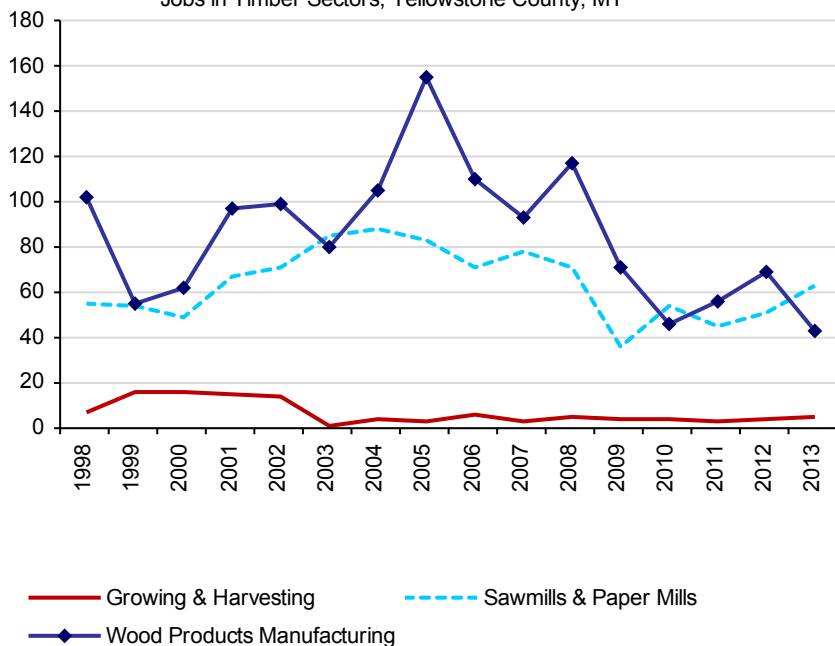
New Jobs in Timber and Non-Timber, Yellowstone County, MT, 1998-2013

- From 1998 to 2013, timber employment shrank by 53 jobs.
- From 1998 to 2013, non-timber employment grew by 14,882 jobs.



- From 1998 to 2013, Harvest shrank from 7 to 5 jobs, a 28.6% decrease.
- From 1998 to 2013, Mills grew from 55 to 63 jobs, a 14.5% increase.
- From 1998 to 2013, Mfg shrank from 102 to 43 jobs, a 57.8% decrease.

Jobs in Timber Sectors, Yellowstone County, MT



Study Guide and Supplemental Information

Which timber sectors are changing the fastest?

What do we measure on this page?

This page describes the change in timber jobs compared to the change in non-timber jobs and compares how employment in various timber sectors has changed over time.

Why is it important?

To understand the importance of timber and wood products in the local economy it is useful to grasp the source of new jobs and the relative contribution of the timber industry to net new jobs.

Components of the timber industry may create or lose jobs at different rates. A growth in wood products manufacturing employment, for example, can indicate increased value-added activity. Alternatively, a loss of sawmills and paper mills employment can indicate the closure of a mill with important impacts on the community where the mill was located.

Some geographies are more dependent on timber-related employment than others. This is important to understand because activities on public lands that impact the timber industry may affect other sectors of the economy.

Geographies with economies that focus on resource extraction and commodity production can be subject to boom-and-bust cycles as well as other economic challenges, such as slower long-term economic growth.

In the case of timber and wood products, mechanization, rising transportation costs, volatile prices, competition from abroad, shifting public values related to the management of public lands, the restructuring of timber companies as Real Estate Investment Trusts, and other factors have led to business and employment declines in many communities.

Methods

The bottom figure on this page starts in 1998 because that is the year the Census Bureau (and County Business Patterns) shifted to using the new North American Industrial Classification System (NAICS).

Data on this page were obtained from County Business Patterns. We use this source because, compared to other sources, it has fewer data gaps (instances when the federal government will not release information to protect confidentiality of individual businesses). It also includes both full and part-time employment.

The disadvantage of County Business Patterns data is that they do not include employment in government, agriculture, railroads, or the self-employed and as a result under-count the size of industry sectors. Also, County Business Patterns data are based on mid-March employment and do not take into account seasonal fluctuations. For these reasons, the data are most useful for showing long-term trends, displaying differences between geographies, and showing the relationship between sectors over time.

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps.

Additional Resources

The Bureau of Labor Statistics provides an overview and outlook of the timber industry (as part of agriculture, forestry, and fishing). See: bls.gov/oco/cg/cgs001.htm (6).

A useful book on the evolving competitive environment for commodity industries in rural areas is: Gaston, William A., and Karen J. Baehler. 1995. *Rural Development in the United States: Connecting Theory, Practice, and Possibilities*. Washington: Island Press.

Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at headwaterseconomics.org/eps (4).

Data Sources

U.S. Department of Commerce. 2015. Census Bureau, County Business Patterns, Washington, D.C.

What role do the self-employed play in the timber industry?

This page describes the number of nonemployer businesses (in most cases self-employed individuals) in timber by sector and geography. It offers an additional source to supplement data used in previous pages of this report that do not include the self-employed.

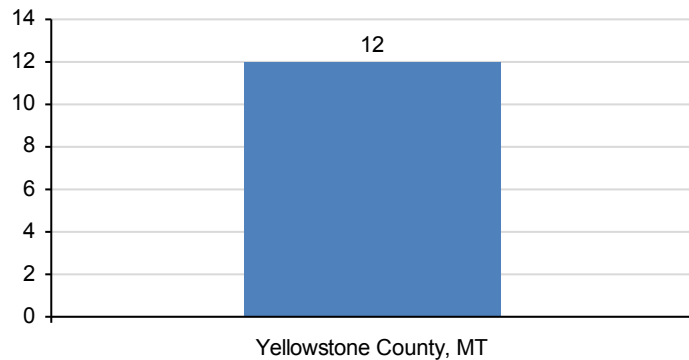
Proprietors in Timber, 2013

	Yellowstone County, MT	U.S.
Total Proprietors	11,195	22,735,915
Timber	12	71,441
Forestry & Logging	9	45,130
Wood Products Manufacturing	na	24,816
Paper Manufacturing	3	1,495
Non-Timber	11,183	22,664,474

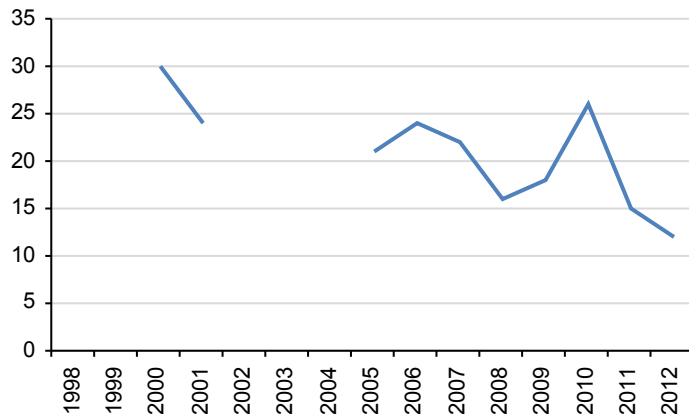
Percent of Total

Timber	0.1%	0.3%
Forestry & Logging	0.1%	0.2%
Wood Products Manufacturing	na	0.1%
Paper Manufacturing	0.0%	0.0%
Non-Timber	99.9%	99.7%

Timber Proprietors, Yellowstone County, MT, 2012



Timber Proprietors, Yellowstone County, MT



- From 1998 to 2012, timber proprietors in the Yellowstone County, MT shrank from 14 to 12, a 14.3% decrease.

Study Guide and Supplemental Information

What role do the self-employed play in the timber industry?

What do we measure on this page?

This page describes the number of nonemployer businesses (in most cases self-employed individuals) in timber by sector and geography. It offers an additional source to supplement data used in previous pages of this report that do not include the self-employed.

Nonemployer Business: A business with no paid employees, with annual business receipts of \$1,000 or more, and subject to federal income taxes. Nonemployer businesses can be individual proprietorships, partnerships, or corporations. Most nonemployers are self-employed individuals operating very small unincorporated businesses, which may or may not be the owner's principal source of income.

Why is it important?

Significant portions of the timber industry, especially related to forestry and logging activities that include things such as cutting, harvesting, and transporting timber, may be conducted by nonemployer businesses. These nonemployer businesses are not reported by County Business Patterns but are reported by Nonemployer Statistics. It is important to use these two data sources in tandem when evaluating the size and trends in timber employment.

Methods

Nonemployer Statistics provides the only source of detailed and comprehensive data on the scope, nature, and activities of U.S. businesses with no paid employment and payroll.

According to the Census Bureau, "Most nonemployers are self-employed individuals operating very small unincorporated businesses, which may or may not be the owner's principal source of income. These firms are excluded from most other business statistics."

The three timber sub-categories in the table Proprietors in Timber are 3-digit NAICS categories (from Nonemployer Statistics). They are different than the three summary categories (from County Business Patterns) shown on previous pages.

What we show as Timber in the table and figures on this page is the sum of the following NAICS codes: Forestry and Logging (113), Wood Products Manufacturing (321), and Paper Manufacturing (322).

Depending on the geographies selected, some data may not be available due to disclosure restrictions.

Additional Resources

Nonemployer Statistics data can be found at: [census.gov/econ/nonemployer/index.html](https://www.census.gov/econ/nonemployer/index.html) (7).

Nonemployer business definitions can be found at: [census.gov/econ/nonemployer/definitions.htm](https://www.census.gov/econ/nonemployer/definitions.htm) (8).

Data Sources

U.S. Department of Commerce. 2014. Census Bureau, Nonemployer Statistics, Washington, D.C.

How do timber industry wages compare to wages in other sectors?

This page describes wages (in real terms) from employment in the timber industry, including sub-sectors, compared to wages from employment in all non-timber sectors combined. It also describes the percent of jobs in each category. These are shown together to illustrate the relative wage levels in timber, including sub-sectors, and how many people are employed in each sub-sector.

Average Annual Wages, 2013 (2014 \$s)

	Yellowstone County, MT	U.S.
All Sectors	\$42,519	\$50,600
Private	\$41,792	\$50,495
Timber	\$31,189	\$50,922
Forestry & Logging	na	\$41,320
Wood Products Manufacturing	\$31,189	\$39,245
Paper Manufacturing	\$0	\$63,328
Non-Timber	\$39,942	\$50,492
Government	\$48,463	\$51,166

This table shows wage data from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on previous pages of this report.

Percent of Total Employment, 2013

	Yellowstone County, MT	U.S.
Private	89.1%	84.3%
Timber	0.1%	0.6%
Forestry & Logging	na	0.0%
Wood Products Manufacturing	0.1%	0.3%
Paper Manufacturing	0.0%	0.3%
Non-Timber	78.8%	83.7%
Government	10.9%	15.7%

This table uses employment data from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on previous pages of this report.

Study Guide and Supplemental Information

How do timber industry wages compare to wages in other sectors?

What do we measure on this page?

This page describes wages (in real terms) from employment in the timber industry, including sub-sectors, compared to wages from employment in all non-timber sectors combined. It also describes the percent of jobs in each category. These are shown together to illustrate the relative wage levels in timber, including sub-sectors, and how many people are employed in each sub-sector.

The primary purpose of this page is to compare the average annual wages between sectors, and to investigate the relative number of people employed in high and low-wage sectors.

Why is it important?

The timber industry has the potential to provide high-wage jobs, but this may differ by timber sub-sector and by geography. Some important issues to consider are how timber industry wages compare to wages in other sectors, whether some components of the timber industry pay higher wages than others, and if there are significant wage differences between geographies.

Methods

The wage and employment data on this page are from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on the initial pages of this report.

The three timber sub-sectors in the tables are 3-digit NAICS categories (from Quarterly Census of Employment and Wages) and are different than the three summary categories (from County Business Patterns) shown on the initial pages of this report.

What we show as Timber in the tables on this page is the sum of the following NAICS codes: Forestry and Logging (113), Woods Product Manufacturing (321), and Paper Manufacturing (322).

Depending on the geographies selected, some data may not be available due to disclosure restrictions.

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses custom data aggregations calculated from various NAICS codes. Occasionally, one or more data values underlying these aggregations are non-disclosed. These values are indicated with tildes (~).

Additional Resources

For an overview of how the Bureau of Labor Statistics treats employment, see: bls.gov/bls/employment.htm (9).

For an overview of how the Bureau of Labor Statistics treats pay and benefits, see: bls.gov/bls/wages.htm (10).

Employment and wage estimates are also available from the Bureau of Labor Statistics for over 800 occupations. Looking at timber by occupation, rather than by sector or industry, is helpful since wages can vary dramatically across occupations. For more information, see: bls.gov/oes (11).

For more information on wages in non-timber industries run the EPS Socioeconomic Measures report.

Data Sources

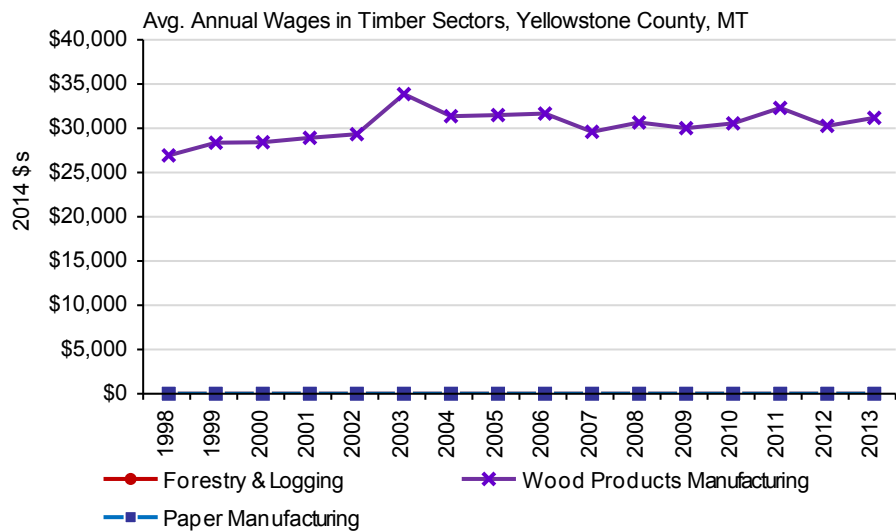
U.S. Department of Labor. 2014. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Washington, D.C.

How do timber jobs and wages compare?

This page describes wages (in real terms) and employment levels in different timber sectors. It also shows average wage trends (in real terms) for timber sectors.



- From 1998 to 2013, average wages in wood products manufacturing grew (in real terms) from \$26,932 to \$31,189, a 16% increase.



Data Sources: U.S. Department of Labor. 2014. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Washington, D.C.

Study Guide and Supplemental Information

How do timber jobs and wages compare?

What do we measure on this page?

This page describes wages (in real terms) and employment levels in different timber sectors. It also shows average wage trends (in real terms) for timber sectors.

Why is it important?

While the timber industry has the potential to offer high wages, not all components of the timber industry pay the same wages or employ the same number of people. A significant increase in timber jobs that pay above the average for all industries will increase overall average earnings per job. On the other hand, a significant increase in timber jobs that pay below the average for all industries will decrease overall average earnings per job. A modest change in timber employment, especially when this industry is a small share of total employment, will not likely affect average earnings in a local area.

Methods

The wage and employment data on this page are from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on the initial pages of this report.

The three timber sub-sectors in the figures are 3-digit NAICS categories (from Quarterly Census of Employment and Wages) and are different than the three summary categories (from County Business Patterns) shown on the initial pages of this report.

What we show as Timber in the figures on this page is the sum of the following NAICS codes: Forestry and Logging (113), Wood Products Manufacturing (321), and Paper Manufacturing (322).

The figure *Avg. Annual Wages in Timber Sectors* starts in 1998 to be consistent with the start date of figures on earlier pages of this report.

Depending on the geographies selected, some data may not be available due to disclosure restrictions.

Additional Resources

For an overview of how the Bureau of Labor Statistics treats employment, see: [bls.gov/bls/employment.htm](https://www.bls.gov/bls/employment.htm) (9).

For an overview of how the Bureau of Labor Statistics treats pay and benefits, see: [bls.gov/bls/wages.htm](https://www.bls.gov/bls/wages.htm) (10).

If there are significant undisclosed data on this page, other sources for timber wage data include:

The Bureau of Labor Statistics' Quarterly Census of Employment and Wages, which has data for industries at the state level, is available at: data.bls.gov:8080/PDQ/outside.jsp?survey=en (12).

The Bureau of Labor Statistics' Occupational Outlook Handbook, 2010-2011 Edition, which has detailed industry earnings and wages data at the national level, is available at: [bls.gov/oco](https://www.bls.gov/oco) (13).

The County Business Patterns database, which reports industry-level employment and payroll and can be used to estimate earnings, is available at: [census.gov/econ/cbp/index.html](https://www.census.gov/econ/cbp/index.html) (14).

Data Sources

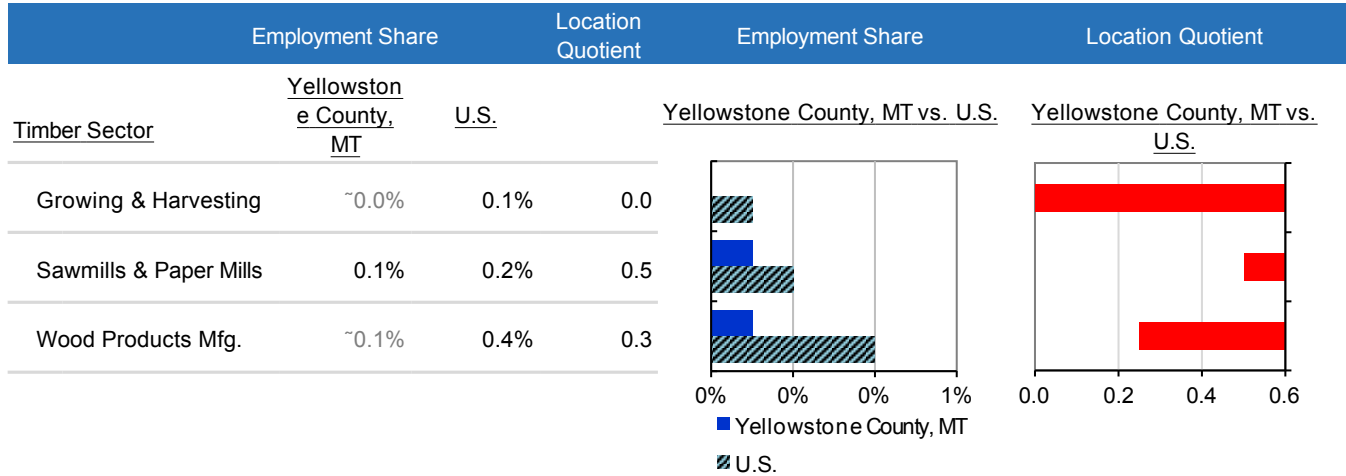
U.S. Department of Labor. 2014. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Washington, D.C.

How does regional timber employment compare to the U.S.?

This page describes how the region is specialized (or under-specialized) in timber employment. The figure illustrates the difference between the region and the U.S. by comparing timber jobs as a share of total employment and with location quotients.

Location quotient: A ratio that compares an industry’s share of total employment in a region to the national share. More precisely, it is the percent of local employment in a sector divided by the percent employment in the same sector in the U.S. In other words, it is a ratio that measures specialization, using the U.S. as a benchmark. A location quotient of more than 1.0 means the local area is more specialized in that sector relative to the U.S. A location quotient of less than 1.0 means it is less specialized.

Percent of Total Private Employment in Timber Sectors, Yellowstone County, MT vs. U.S., 2013



- In 2013, sawmills & paper mills had the highest location quotient score (0.5), and growing & harvesting had the lowest (0).

Study Guide and Supplemental Information

How does regional timber employment compare to the U.S.?

What do we measure on this page?

This page describes how the region is specialized (or under-specialized) in timber employment. The figure illustrates the difference between the region and the U.S. by comparing timber jobs as a share of total employment and with location quotients.

Location quotient: A ratio that compares an industry's share of total employment in a region to the national share. More precisely, it is the percent of local employment in a sector divided by the percent employment in the same sector in the U.S. In other words, it is a ratio that measures specialization, using the U.S. as a benchmark. A location quotient of more than 1.0 means the local area is more specialized in that sector relative to the U.S. A location quotient of less than 1.0 means it is less specialized.

The term "benchmark" in this report should not be construed as having the same meaning as in the National Forest Management Act (NFMA).

Why is it important?

Geographies with economies that focus on resource extraction and commodity production can be subject to boom-and-bust cycles as well as other economic challenges, such as slower long-term economic growth.

In the case of timber and wood products, mechanization, rising transportation costs, volatile prices, competition from abroad, shifting public values related to the management of public lands, the restructuring of timber companies as Real Estate Investment Trusts, and other factors have led to business and employment declines in many communities.

A useful way to think about location quotients is as a measure of whether a place or geography produces enough goods or services from an industry to satisfy local demand for those goods or services. Results above or below the 1.0 standard indicate the degree to which a place or geography may import or export a good or service. Although there is no precise cutoff, location quotients above 2.0 indicate a strong industry concentration (and that an area is likely exporting goods or services) and those less than .5 indicate a weak industry concentration (and that an area is likely importing goods or services).

A few caveats: (1) A large location quotient for a particular sector does not necessarily mean that sector is a significant contributor to the economy. (2) LQs greater than 1.0 only suggest potential export capacity when compared to the U.S. and do not take into account local demand. Local demand may be greater than a national average, and therefore all goods and services may be consumed locally (i.e., not exported). (3) LQs change from year to year. (4) LQs can vary when income or wage data are used rather than employment.

Methods

$LQ = (ei/e) \text{ divided by } (Ei/E)$

Where: ei = Local employment in industry i , e = Total local employment, Ei = U.S. employment in industry i , E = Total U.S. employment.

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps. These values are indicated with tildes (~).

Additional Resources

For a review of literature on economic diversity, see Sterling, Andrew. 1998. "On the Economics and Analysis of Diversity." Electronic Working Papers Series, University of Sussex, available at: sussex.ac.uk/Units/spru/publications/imprint/sewps/sewp28/sewp28.pdf (15); and Malizia, E. E. and K. Shanzai. 2006. "The Influence of Economic Diversity on Unemployment and Stability." *Journal of Regional Science*. 33(2): 221-235.

A useful book on the evolving competitive environment for commodity industries in rural areas is: Gaston, William A., and Karen J. Baehler. 1995. *Rural Development in the United States: Connecting Theory, Practice, and Possibilities*. Washington: Island Press.

A succinct definition of a location quotient is offered by Florida State University's Department of Urban and Regional Planning: mailer.fsu.edu/~tchapin/garnet-tchapin/urp5261/topics/econbase/lq.htm (16).

For an example of location quotients used in a regional economic study, see: [wwjobcenter.org/2009%20SOW%20Report\(FINAL\).pdf](http://wwjobcenter.org/2009%20SOW%20Report(FINAL).pdf) (17).

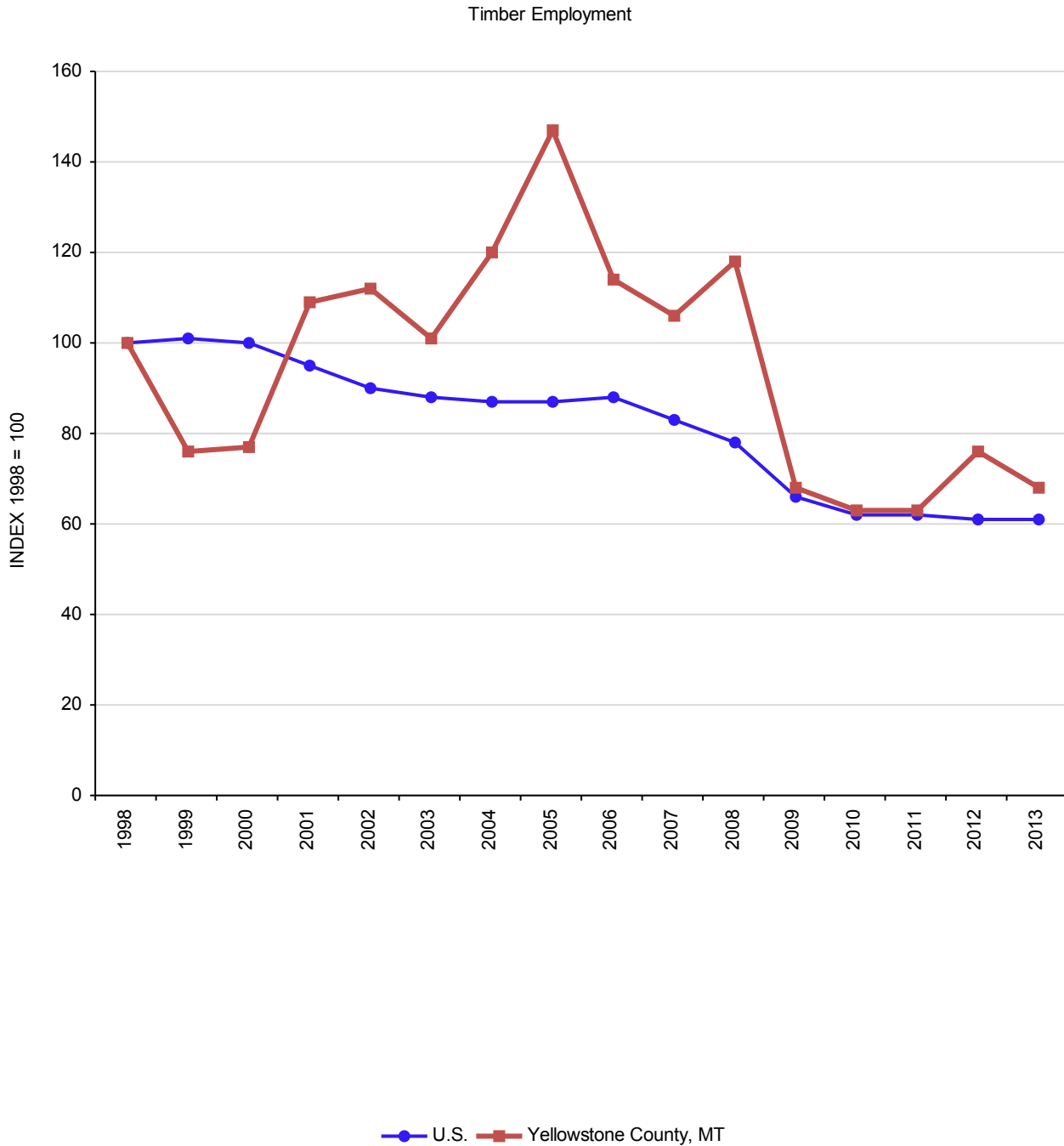
Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at headwaterseconomics.org/eps (4).

Data Sources

U.S. Department of Commerce. 2015. *Census Bureau, County Business Patterns*, Washington, D.C.

How does timber employment change compare across geographies?

This page describes the change in timber employment for all selected geographies and the U.S. The information is indexed (1998=100) so that data from geographies with different size economies can be compared and to make it easier to understand the relative rate of growth or decline of timber employment over time.



- From 1998 to 2013, Yellowstone County, MT had the fastest rate of change in timber employment, and Yellowstone County, MT had the slowest.

Study Guide and Supplemental Information

How does timber employment change compare across geographies?

What do we measure on this page?

This page describes the change in timber employment for all selected geographies and the U.S. The information is indexed (1998=100) so that data from counties with different size economies can be compared to each other, and to larger geographies. Indexing makes it easier to understand the relative rate of change in timber employment over time.

Index: Indexed numbers are compared with a base value. In the line chart, employment in 1998 is the base value, and is set to 100. The employment values for subsequent years are expressed as 100 times the ratio to the base value. The indexing used in the line chart enables easier comparisons between geographies over time.

The term "benchmark" in this report should not be construed as having the meaning as in the National Forest Management Act (NFMA).

Note: If many geographies are selected, it may be difficult to read the figure on this page.

Why is it important?

Not all geographies have attracted or lost timber industries and employment at the same rate. An index makes it clear where the rate of timber growth or decline has been the fastest. Lines above 100 indicate positive absolute growth while those below 100 show absolute decline. The steeper the curve the faster the rate of change.

It may be helpful to look for large year-to-year rises or dips in figure lines to identify rapid employment changes. If the reasons behind these fluctuations are not evident, it may be helpful to talk with regional experts or locals to learn more about what caused abrupt changes.

Geographies with economies that focus on resource extraction and commodity production can be subject to boom-and-bust cycles as well as other economic challenges, such as slower long-term economic growth.

In the case of timber and wood products, mechanization, rising transportation costs, volatile prices, competition from abroad, shifting public values related to the management of public lands, the restructuring of timber companies as Real Estate Investment Trusts, and other factors have led to business and employment declines in many communities.

Methods

The figure begins in 1998 because that is the year the Census Bureau (and County Business Patterns) shifted to using the new North American Industrial Classification System (NAICS).

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps.

Additional Resources

The Forest Service provides a number of publications that offer an overview of the timber industry, as part of the Interim Update of the 2000 Renewable Resource Planning Act Assessment. See: fs.fed.us/research/rpa/pubs-supporting-interim-update-of-2000-rpa-assessment.shtml (5).

The Bureau of Labor Statistics provides an overview and outlook of the timber industry (as part of agriculture, forestry, and fishing). See: bls.gov/oco/cg/cgs001.htm (6).

A useful book on the evolving competitive environment for commodity industries in rural areas is: Gaston, William A., and Karen J. Baehler. 1995. *Rural Development in the United States: Connecting Theory, Practice, and Possibilities*. Washington: Island Press.

Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at headwaterseconomics.org/eps (4).

Data Sources

U.S. Department of Commerce. 2015. *Census Bureau, County Business Patterns*, Washington, D.C.

Data Sources

The EPS Services report uses published statistics from government sources that are available to the public and cover the entire country. All data used in EPS can be readily verified by going to the original source. The contact information for databases used in this profile is:

- **County Business Patterns**
Census Bureau, U.S. Department of Commerce
<http://www.census.gov/epcd/cbp/view/cbpview.html>
Tel. 301-763-2580
- **Quarterly Census of Employment and Wages**
Bureau of Labor Statistics, U.S. Department of Labor
<http://www.bls.gov/cew>
Tel. 202-691-6567
- **Nonemployer Statistics**
Bureau of the Census, U.S. Department of Commerce
<http://www.census.gov/econ/nonemployer/index.html>
Tel. 301-763-2580

Methods

EPS core approaches: EPS is designed to focus on long-term trends across a range of important measures. Trend analysis provides a more comprehensive view of changes than spot data for select years. We encourage users to focus on major trends rather than absolute numbers. EPS displays detailed industry-level data to show changes in the composition of the economy over time and the mix of industries at points in time. EPS employs cross-sectional benchmarking, comparing smaller geographies such as counties to larger regions, states, and the nation, to give a sense of relative performance. EPS allows users to aggregate data for multiple geographies, such as multi-county regions, to accommodate a flexible range of user-defined areas of interest and to allow for more sophisticated cross-sectional comparisons.

SIC to NAICS: Starting in the 1930s, the Standard Industrial Classification (SIC) system has served as the structure for the collection, aggregation, presentation, and analysis of the U.S. economy. Under SIC, which employed a four-digit coding structure, an industry consists of a group of establishments primarily engaged in producing or handling the same product or group of products or in rendering the same services. As the U.S. economy shifted from a primary emphasis on manufacturing to a more complex services economy, SIC became less useful as a tool for describing the economy's changing industrial composition.

The North American Industry Classification System (NAICS), developed using a production-oriented conceptual framework, groups establishments into industries based on the activity in which they are primarily engaged. NAICS uses a six-digit hierarchical coding system to classify all economic activity into twenty industry sectors. Five sectors are mainly goods-producing sectors and fifteen are entirely services-producing sectors.

County Business Patterns started organizing their data using NAICS in 1998, Census in 2000, and Bureau of Economic Analysis's Regional Economic Information System in 2001. Because the methods underlying SIC and NAICS are fundamentally different (what was sold vs. how it was produced), NAICS is not backward compatible with SIC. There are a few circumstances where it is acceptable to show uninterrupted trends across the SIC-NAICS discontinuity. Total personal income, total labor income, and non-labor income can all be plotted continuously without a problem. In addition, a few industries can also be plotted without a break, though this is not the case for services.

Adjusting dollar figures for inflation: Because a dollar in the past was worth more than a dollar today, data reported in current dollar terms should be adjusted for inflation. The U.S. Department of Commerce reports personal income figures in terms of current dollars. All income data in EPS-HDT are adjusted to real (or constant) dollars using the Consumer Price Index. Figures are adjusted to the latest date for which the annual Consumer Price Index is available.

Data gaps and estimation: Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses supplemental data from the U.S. Department of Commerce to estimate these data gaps. These are indicated in italics in tables. Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at headwaterseconomics.org/eps.

Links to Additional Resources

For more information about EPS see:

headwaterseconomics.org/EPS

Web pages listed under Additional Resources include:

Throughout this report, references to on-line resources are indicated with italicized numbers in parentheses. These resources are provided as hyperlinks here.

- 1 www.naics.com/search.htm
- 2 www.bls.gov/bls/NAICS.htm
- 3 www.census.gov/eos/www/naics
- 4 headwaterseconomics.org/eps
- 5 www.fs.fed.us/research/rpa/pubs-supporting-interim-update-of-2000-rpa-assessment.shtml
- 6 www.bls.gov/oco/cg/cgs001.htm
- 7 www.census.gov/econ/nonemployer/index.html
- 8 www.census.gov/econ/nonemployer/definitions.htm
- 9 www.bls.gov/bls/employment.htm
- 10 www.bls.gov/bls/wages.htm
- 11 www.bls.gov/oes
- 12 www.data.bls.gov:8080/PDQ/outside.jsp?survey=en
- 13 www.bls.gov/oco
- 14 www.census.gov/econ/cbp/index.html
- 15 www.sussex.ac.uk/Units/spru/publications/imprint/sewps/sewp28/sewp28.pdf
- 16 www.mailer.fsu.edu/~tchapin/garnet-tchapin/urp5261/topics/econbase/lq.htm
- 17 [www.wjobcenter.org/2009%20SOW%20Report\(FINAL\).pdf](http://www.wjobcenter.org/2009%20SOW%20Report(FINAL).pdf)