



HEADWATERS
ECONOMICS

A Profile of Agriculture

Selected Geographies:
Yellowstone County, MT

Benchmark Geographies:
U.S.

Produced by
Headwaters Economics'
Economic Profile System (EPS)
<https://headwaterseconomics.org/eps>

July 19, 2018

About the Economic Profile System (EPS)

EPS is a free web tool created by Headwaters Economics to build customized socioeconomic reports of U.S. counties, states, and regions. Reports can be easily created to compare or aggregate different areas. EPS uses published statistics from federal data sources, including the U.S. Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics.

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

See <https://headwaterseconomics.org/eps> for more information about the capabilities of EPS. For technical questions, contact Patty Gude at eps@headwaterseconomics.org or telephone 406-599-7425.



headwaterseconomics.org

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



www.blm.gov

The Bureau of Land Management, an agency within the U.S. Department of Interior, administers 249.8 million acres of America's public lands, located primarily in western states. It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of 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 sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations.

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*The term "farm" in this report describes all forms of agricultural production, including livestock operations.

Note to Users:

This is one of 14 reports that can be created and downloaded from EPS. 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. The EPS reports are downloadable as Excel or PDF documents. See <https://headwaterseconomics.org/eps>.

Agriculture

Yellowstone County, MT

Farm Employment

	Yellowstone County, MT	U.S.
Total Employment, 2016	109,252	193,668,400
Farm Employment	1,375	2,644,000
Farm Proprietors Employment	1,134	1,824,000
Non-Farm Employment	107,877	191,024,400

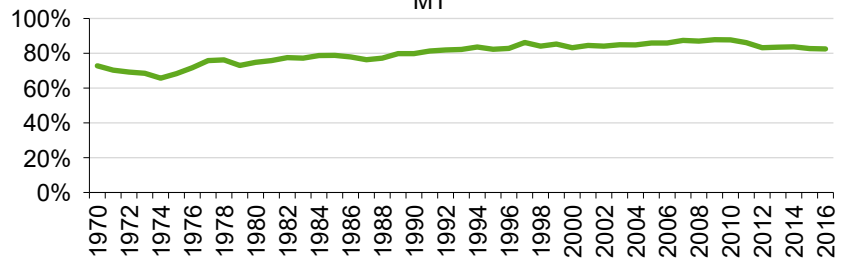
Percent of Total

Farm Employment	1.3%	1.4%
Farm Proprietors Employment	1.0%	0.9%
Non-Farm Employment	98.7%	98.6%

All employment data on this page are reported by place of work.

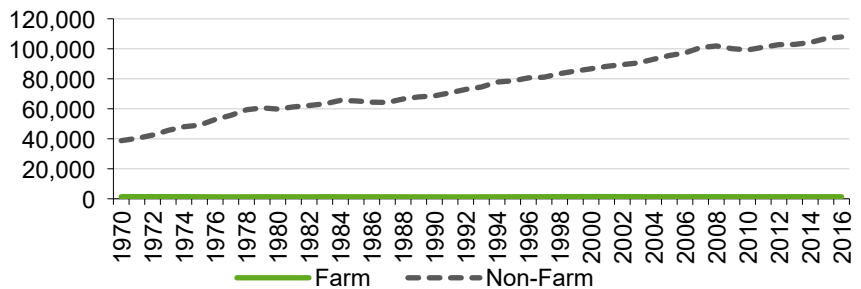
- In 1970, farm proprietors represented 72.8 percent of all farm employment. By 2016, farm proprietors represented 82.5 percent of all farm employment.

Farm Proprietors as a Percent of Farm Jobs, Yellowstone County, MT



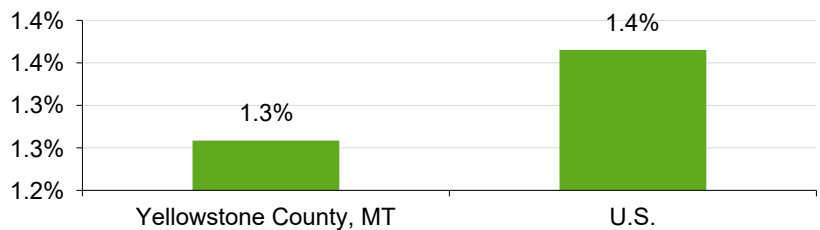
- From 1970 to 2016, farm employment shrank from 1,393 to 1,375 jobs, a 1.3 percent decrease.
- From 1970 to 2016, non-farm employment grew from 38,756 to 107,877 jobs, a 178.3 percent increase.

Farm and Non-Farm Jobs, Yellowstone County, MT



- In 2016, U.S. had the largest percent of total farm employment (1.37%), and Yellowstone County, MT had the smallest (1.26%).

Farm Jobs as a Percent of Total Employment, 2016



Farm Employment

What do we measure on this page?

This page describes the number of farm jobs (full- and part-time), including proprietors, and farm jobs as a share of total employment for the selected location(s). It also shows long-term trends for farm proprietors as a share of all farm jobs, and for farm versus non-farm jobs.^{1, 2}

Farm: Refers to all forms of agricultural production, including livestock operations.

Total Employment: Full- and part-time workers, wage and salary jobs (employees), and proprietors (the self-employed).

Farm Employment: The number of workers (full- and part-time) engaged in the production of agricultural commodities. It includes sole proprietors, partners, and hired laborers.

Farm Proprietors: Those who are self-employed (full- and part-time) as non-corporate farm operators. They can be sole proprietors or partners. For the purpose of defining "farm" proprietors, a farm is an establishment that produces or normally would be expected to produce at least \$1,000 worth of farm products in a typical year.

Non-Farm Employment: Full- and part-time non-farm wage and salary employment and non-farm self-employment.

Data on this page are from the U.S. Bureau of Economic Analysis. These data portray long-term trends in employment and personal income of people employed in farming. This source also provides data on long-term trends in production expenses, different sources of crop and livestock income, and net profits, which are presented later in this report. The Census of Agriculture also provides employment information, but does so only every five years. The Census of Agriculture is used elsewhere in this report because of its detailed information on the size and number of farms by type.

Why is it important?

Farming and ranching can be a significant portion of the landscape and the local economy.

Nationwide trends indicate that, with gains in production efficiency, fewer people are working in farming. The land in farms is valuable for a number of reasons including the production of food and the preservation of rural communities, open space, scenic vistas, and wildlife habitat.

The growth or decline in the number of farm proprietors could indicate new agricultural entrepreneurs and/or the consolidation of agricultural enterprises.

Agriculture

Yellowstone County, MT

Farm Income*

	Yellowstone County, MT	U.S.
Earnings by Place of Work (\$1000), 2016	5,880,884	11,542,172,525
Farm Earnings	15,679	70,673,622
Farm Proprietors' Income	4,264	40,657,242
Non-Farm Earnings	5,865,204	11,471,498,903

Percent of Total

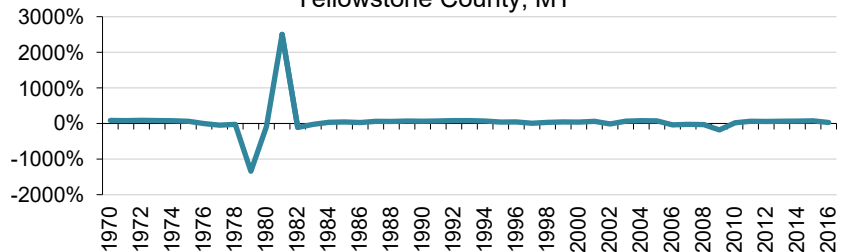
Farm Earnings	0.3%	0.6%
Farm Proprietors' Income	0.1%	0.4%
Non-Farm Earnings	99.7%	99.4%

Farm business income shown here is different than farm personal income shown on the previous page.

* Thousands of 2017 \$s

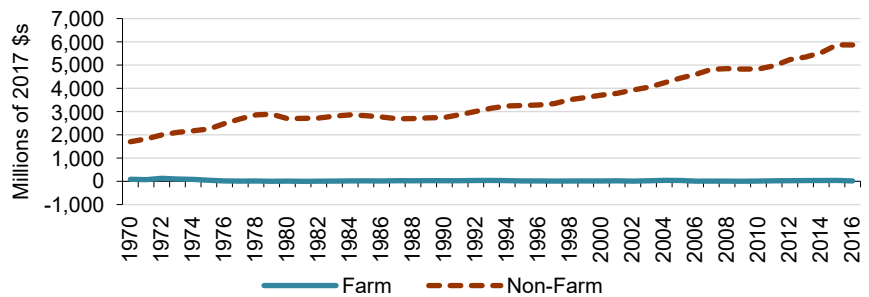
- In 1970, farm proprietors' income represented 85.1 percent of all farm earnings. By 2016, farm proprietors' income represented 27.2 percent of all farm earnings.

Farm Proprietors' Income as a Percent of Farm Earnings, Yellowstone County, MT



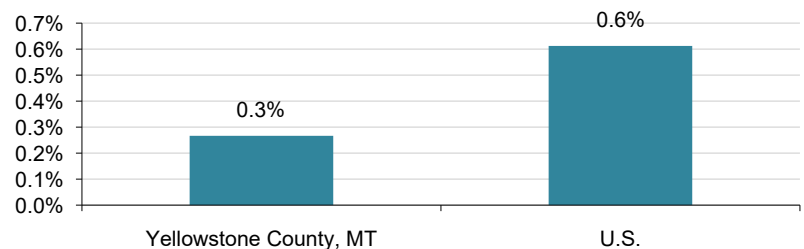
- From 1970 to 2016, farm earnings shrank from \$87.2 million to \$15.7 million, a 82 percent decrease.
- From 1970 to 2016, non-farm earnings grew from \$1,702.7 million to \$5,865.2 million, a 244.5 percent increase.

Farm and Non-Farm Earnings, Yellowstone County, MT



- In 2016, U.S. had the largest percent of total earnings from farm earnings (0.61%), and Yellowstone County, MT had the smallest (0.27%).

Farm Earnings as a Percent of Total Earnings, 2016



Data Sources: U.S. Department of Commerce. 2017. Bureau of Economic Analysis, Regional Economic Accounts, Washington, D.C.

Find more reports like this at headwaterseconomics.org/eps

Data and Graphics | Page 2

Farm Income

What do we measure on this page?

This page describes earnings (in real terms and by place of work) derived from farm employment, and farm earnings as a share of all labor earnings. It also shows long-term trends in farm proprietors' income as a share of all farm earnings, and farm versus non-farm earnings.^{1,3}

Farm: All forms of agricultural production, including livestock operations.

Earnings by Place of Work: The sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income (farm and non-farm). It does not include non-labor sources of income. Non-labor sources include Dividends, Interest and Rent, as well as Transfer Payments (e.g., Social Security, Medicare). For some farm owners, Rent may represent a significant source of income—for example, renting land to a neighboring farm, or rental income in the form of leasing subsurface rights, such as for oil and gas development. For more information on non-labor income, run an EPS Non-Labor report at <https://headwaterseconomics.org/eps>.

Farm Earnings: Net income from sole proprietors, partners, and hired laborers arising directly from the production of agricultural commodities, either livestock or crops. It includes net farm proprietors' income, wages and salaries, pay-in-kind, and supplements to wages and salaries of hired farm laborers. It specifically excludes income from non-family-farm corporations.

Farm Proprietors' Income: Income received by sole proprietorships and partnerships in the operation of farms. It excludes income that is received by corporate farms.

Non-Farm Earnings: The sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income for all industries, excluding farms.

The personal income information on this page does not include income received by corporate farms. The U.S. Department of Commerce provides farm "business" income data on corporations, in terms of production expenses, sources of income, and net profits. These data are presented in the next section of this report.

Why is it important?

The farm earnings trends shown on this page can be viewed alongside the employment trends on the previous page of this report. In some cases, farm earnings may decline (in absolute or relative terms) while farm employment stays the same or increases. In other cases, farm earnings may increase (in absolute or relative terms) while farm employment stays the same or declines. The same trends apply to farm proprietors and their income and point to declining or improving farm wages. For more information on earnings, see the Wages portion of this report.

Agriculture

Yellowstone County, MT

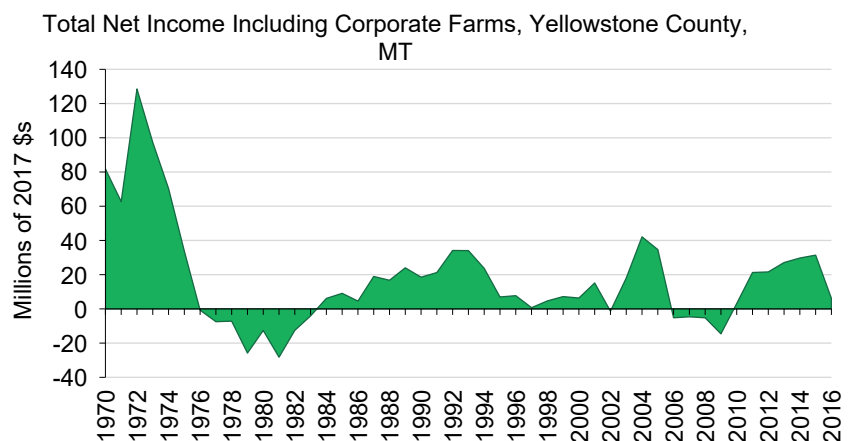
Farm Business Income*

	Yellowstone County, MT	U.S.
Total Cash Receipts & Other Income (\$1000), 2016	212,642	413,092,884
Cash Receipts from Marketing	199,892	373,189,735
Livestock & Products	144,387	182,530,706
Crops	55,506	190,659,028
Other Income	12,749	39,903,149
Government Payments	4,484	13,252,250
Imputed Rent & Misc. Income	8,265	26,650,899
Total Production Expenses	205,725	371,770,568
Net Income: Receipts - Expenses	6,916	41,322,315
Value of Inventory Change	-794	1,227,785
Total Net Income Including Corp. Farms	6,122	42,550,101
Ratio: Total Cash Receipts & Other Income/Total Production Expenses	1.03	1.11

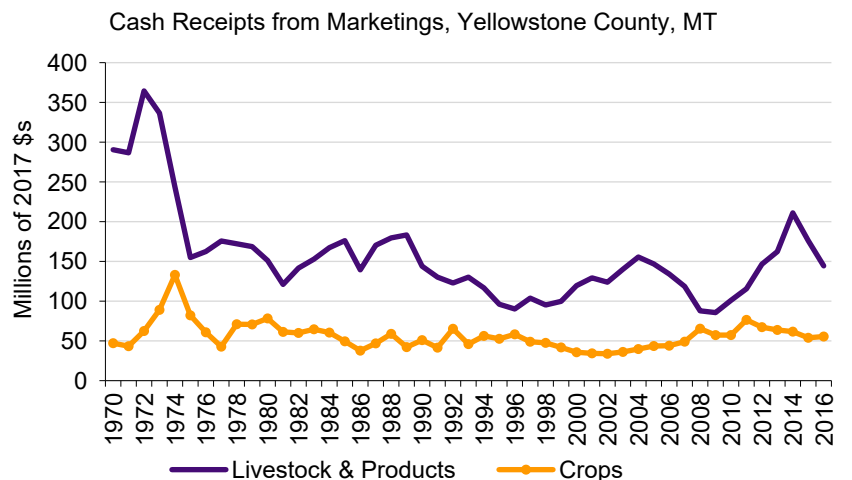
Farm business income shown here is different than farm personal income shown on the previous page.

* Thousands of 2017 \$s

- From 1970 to 2016, net income including corporate farms shrank from \$81.7 million to \$6.1 million, a 92.5 percent decrease.



- From 1970 to 2016, cash receipts from livestock and products shrank from \$290.5 million to \$144.4 million, a 50.3 percent decrease.
- From 1970 to 2016, cash receipts from crops grew from \$47.1 million to \$55.5 million, a 17.8 percent increase.



Farm Business Income

What do we measure on this page?

This page describes components of farm business income and expenses (in real terms), and shows a ratio of gross income to production expenses as a measure of profitability. It also shows trends in net farm business income and cash receipts.¹ The farm data on this page are for all forms of agricultural production, including livestock operations. The farm business income reported on this page represents business revenues minus expenses and operating costs. This is a different form of income than farm labor earnings, which are the wages and salaries of farm employees.

Total Cash Receipts & Other Income: The gross cash receipts of all farms. It consists of: the cash receipts from farm marketing of crops and livestock; the cash receipts from other farm-related activities, including recreational services, sales of forest products, and custom-feeding services performed by farm operators; the payments to farmers under several federal government farm subsidy programs; the imputed value of home consumption, which is the value of the farm products produced and consumed on farms; and the imputed gross rental value of farm dwellings.

Total Production Expenses: Expenditures incurred by farm operators in the production of agricultural commodities, including livestock and crops. The major categories of production expenses are intermediate product expenses, which provide inputs to the production process (feed, livestock and poultry, seed, fertilizer, etc.), labor expenses (cash wages, employer contributions to Social Security, perquisites, and contract labor expenses), and other expenses (interest, net rent paid to non-operator landlords, capital consumption, property taxes, etc.).

Value of Inventory Change: The estimated value of net change in the farm inventories of livestock and crops that are held for sale during a given calendar year. This estimate is added to the estimate of realized net income so that the estimate of farm proprietors' income for a given year will include only the farm income from production during that year, or from "current" production. This estimate is added to Realized Net Income to calculate Total Net Income Including Corporate Farms.

Total Net Income Including Corporate Farms: The net income received by the sole proprietorships, partnerships, and corporations that operate farms. It is Realized Net Income plus the Value of Inventory Change.

Ratio (Total Cash Receipts & Other Income divided by Total Production Expenses): This is not an official Bureau of Economic Analysis calculation, but is another measure of farm business profitability.

The datasource for this page (U.S. Dept. of Commerce) was selected due of the high level of detail and long-term trends.⁴

Why is it important?

These data help answer important questions concerning the long-term health of the farm economy. In some places, farm business profits have been highly volatile and rising expenses and/or declining cash receipts have narrowed profitability. In other places, despite the volatility present in commodities markets, farming remains highly profitable.

In the early 1970s a period of high profitability in the agricultural sector was followed by a period of rapid decline—partly due to global economically and politically induced market volatility during that time. For example, the 1973 oil crisis, coupled with the 1973–1974 stock market crash, led to a major recession. The U.S. grain embargo against the Soviet Union in 1980 also negatively impacted farm profits. Since the mid-1980s, farm profits have generally increased.

Trends in livestock and crop production also closely follow commodity prices, which are available from the U.S. Department of Commerce.⁵ Additional insights on agriculture are available from the Economic Research Service of the U.S. Department of Agriculture, including data, charts, and maps showing trends.⁶

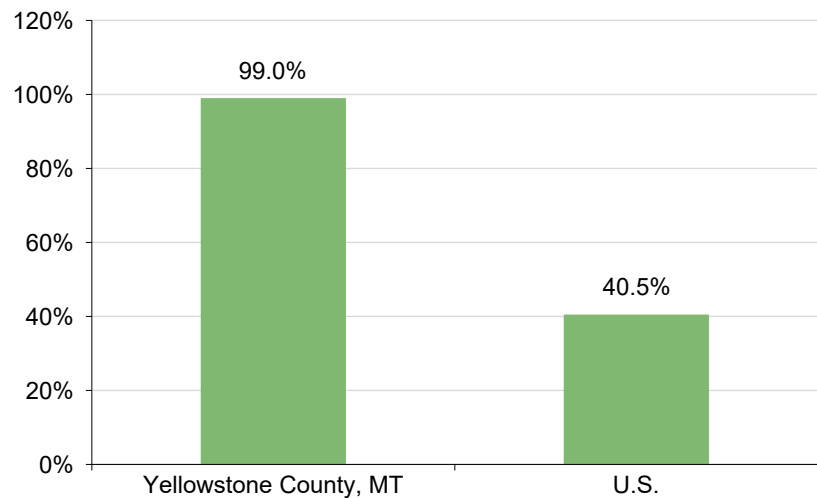
Agriculture

Yellowstone County, MT

Number and Size of Farms

	Yellowstone County, MT	U.S.
Number of Farms, 2012	1,330	2,109,303
Land in Farms (Acres), 2012	1,668,346	914,527,657
Average Farm Size (Acres)	1,254	434
Approximate Land Area (Acres)	1,685,309	2,260,583,852
Approximate Percent of Land Area in Farms	99.0%	40.5%

Approximate Percent of Land Area in Farms, 2012



- In 2012, Yellowstone County, MT had the largest percent of land area in farms (99%), and the U.S. had the smallest (40.5%).

Number and Size of Farms

What do we measure on this page?

This page describes the number of farms, acres in farms, average farm size, total acres, and percent of total acres in farms.

Farm: All forms of agricultural production, including livestock operations. These data exclude leased public land from total land in farms.

Information on this page comes from the U.S. Department of Agriculture's Census of Agriculture⁷, which is conducted every five years. The advantage of the Census of Agriculture is that it provides a high level of detail that makes it possible to see the role that farms play in the local economy and landscape, and to compare differences between locations. The disadvantages of this data source are that, like all forms of census, the accuracy of the data depends on the survey methods and the quality of the responses. Also, with this data source it is not possible to display continuous long-term trends.

Why is it important?

Even when agriculture is a small component of the economy, the industry can represent a large portion of the land base.

In many areas private agricultural lands are being converted to other uses, including residential development. The conversion of farm and ranch land is important for a number of reasons including the loss of food production and open space, the decline of rural communities, the change in demand on water resources, the spread of development in wildfire-prone areas, the loss of access to lands for recreation and hunting, and the loss of wildlife habitat.

To see how land is being converted to residential development, create an EPS Land Use report at <https://headwaterseconomics.org/eps>.

Farms and ranches continue to be important even as they increasingly operate alongside a larger, non-agricultural economy.⁸ They contribute to local economic diversity, the scenery they provide can be part of the mix of amenities that attract and retain people and businesses across a range of industries, and they contribute an important part of local culture and community vitality.

Agriculture

Yellowstone County, MT

Acres of Farm Land

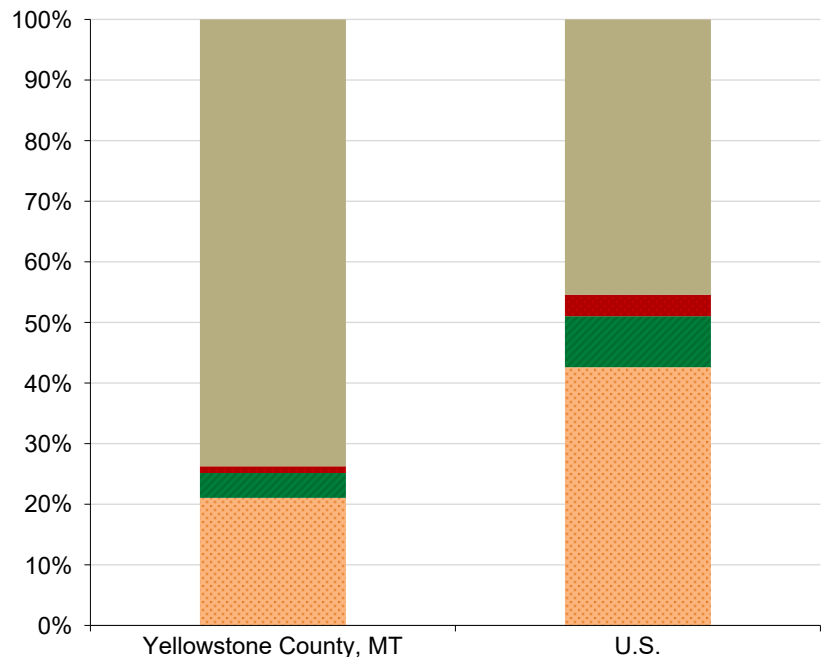
	Yellowstone County, MT	U.S.
Land in Farms (Acres), 2012	1,668,346	914,527,657
Cropland	351,118	389,690,414
Woodland	68,450	77,012,907
Land in Farmsteads & Buildings	18,594	32,515,057
Permanent Pasture & Rangeland	1,230,184	415,309,280

Percent of Total

Cropland	21.0%	42.6%
Woodland	4.1%	8.4%
Land in Farmsteads & Buildings	1.1%	3.6%
Permanent Pasture & Rangeland	73.7%	45.4%

- In 2012, the U.S. had the largest percent of land area in cropland (42.6%), and Yellowstone County, MT had the smallest (21%).
- In 2012, the U.S. had the largest percent of land area in woodland (8.4%), and Yellowstone County, MT had the smallest (4.1%).
- In 2012, the U.S. had the largest percent of land area in farmsteads and buildings (3.6%), and Yellowstone County, MT had the smallest (1.1%).
- In 2012, Yellowstone County, MT had the largest percent of land area in permanent pasture and rangeland (73.7%), and the U.S. had the smallest (45.4%).

Land Area in Farms by Use, 2012



■ Cropland
 ■ Woodland
 ■ Land in Farmsteads & Buildings
 ■ Permanent Pasture & Rangeland

Acres of Farm Land

What do we measure on this page?

This page describes how much farm land (in acres) is used for different production purposes.⁹ The data were obtained from the U.S. Department of Agriculture's Census of Agriculture, which is conducted every five years.

The four categories of farm land use are cropland, woodland, farmsteads and buildings, and permanent pastureland.

Farm: All forms of agricultural production, including livestock operations. These data exclude leased public land from total land in farms.

Cropland: Includes harvested cropland, cropland used only for pasture and grazing, and "other cropland" (i.e., idled cropland or cropland used for cover crops or soil improvement).

Woodland: Includes natural or planted woodlots or timber tracts, for wood products and woodland pasture.

Farmsteads and Buildings: Includes livestock facilities, ponds, roads (private access roads and driveways but not public roads), and wasteland (e.g., ditches).

Permanent Pastureland and Rangeland: Includes permanent pasture and rangeland, other than cropland and woodland, and encompasses grazable land that does not qualify as woodland pasture or cropland pasture.

Why is it important?

Even when agriculture is a small component of the economy in terms of jobs, the industry can represent a large portion of the land base.

Not all agricultural land is used in the same manner. How farm and ranch lands are used can have important economic, environmental, and policy implications. For example, cropland may require water from surrounding lands; woodland can provide important habitat and store water; and pasturelands may be associated with public lands grazing and can provide open vistas that are important for attracting tourists and new migrants. Some lands may be less valuable (e.g., pastureland) and therefore more vulnerable to conversion for urban and suburban uses than other lands (e.g., cropland).

Farms and ranches continue to be important even as they increasingly operate alongside a larger, non-agricultural economy.⁸ They contribute to local economic diversity, the scenery they provide can be part of the mix of amenities that attract and retain people and businesses across a range of industries, and they contribute an important part of local culture and community vitality.

Agriculture

Yellowstone County, MT

Types of Farms

	Yellowstone County, MT	U.S.
All Farms, 2012	1,330	2,109,303
Oilseed & Grain Farming	110	369,332
Vegetable & Melon Farming	5	43,021
Fruit & Nut Tree Farming	0	93,020
Greenhouse, Nursery, etc.	29	52,777
Other Crop Farming	299	496,837
Beef Cattle Ranch. & Farm.	412	619,172
Cattle Feedlots	13	13,734
Dairy Cattle & Milk Prod.	3	46,005
Hog & Pig Farming	7	21,687
Poultry & Egg Production	17	52,849
Sheep & Goat Farming	46	73,272
Animal Aquaculture & Other Animal Prod.	389	227,597

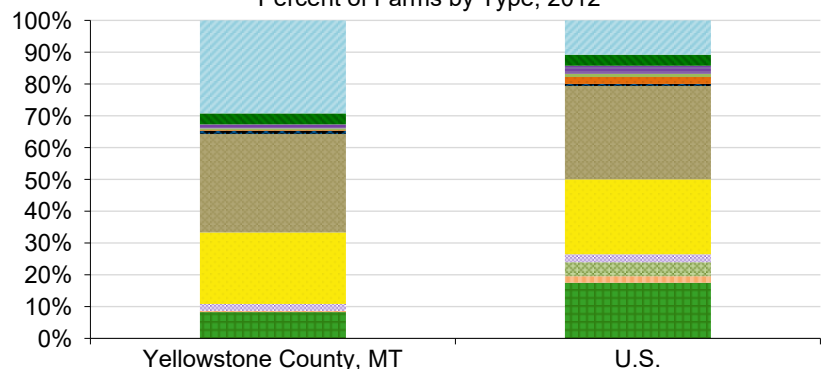
Percent of Total

Oilseed & Grain Farming	8.3%	17.5%
Vegetable & Melon Farming	0.4%	2.0%
Fruit & Nut Tree Farming	0.0%	4.4%
Greenhouse, Nursery, etc.	2.2%	2.5%
Other Crop Farming	22.5%	23.6%
Beef Cattle Ranch. & Farm.	31.0%	29.4%
Cattle Feedlots	1.0%	0.7%
Dairy Cattle & Milk Prod.	0.2%	2.2%
Hog & Pig Farming	0.5%	1.0%
Poultry & Egg Production	1.3%	2.5%
Sheep & Goat Farming	3.5%	3.5%
Aquaculture & Other Prod.	29.2%	10.8%

- In 2012, the U.S. had the largest percent of oilseed and grain farming (17.5%), and Yellowstone County, MT had the smallest (8.3%).

- In 2012, Yellowstone County, MT had the largest percent of beef cattle ranching and farming (31%), and the U.S. had the smallest (29.4%).

Percent of Farms by Type, 2012



Types of Farms

What do we measure on this page?

This page describes the number and percent of all farms according to what they produce.

Farm: All forms of agricultural production, including livestock operations. These data exclude leased public land from total land in farms.

Other Crop Farming (NAICS code 1119): Establishments primarily engaged in (1) growing crops (except oilseed and/or grain; vegetable and/or melon; fruit and tree nut; and greenhouse, nursery, and/or floriculture products). These establishments grow crops, such as tobacco, cotton, sugarcane, hay, sugar beets, peanuts, agave, herbs and spices, and hay and grass seeds; or (2) growing a combination of crops (except a combination of oilseed(s) and grain(s) and a combination of fruit(s) and tree nut(s)).

Beef Cattle Ranching & Farming (NAICS code 112111): Establishments primarily engaged in raising cattle (including cattle for dairy herd replacements).

Aquaculture & Other Animal Production (NAICS codes 11251 & 1129): Aquaculture establishments are primarily engaged in the farm-raising and production of aquatic animals or plants in controlled or selected aquatic environments. Establishments classified as Other Animal Production are primarily engaged in raising animals and insects (except cattle, hogs and pigs, poultry, sheep and goats, and aquaculture) for sale or product production. These establishments are primarily engaged in one of the following: bees, horses and other equine, rabbits and other fur-bearing animals, etc., and producing products such as honey and other bee products. Establishments primarily engaged in raising a combination of animals with no one animal or family of animals accounting for one-half of the establishment's agricultural production are included in this industry group.

The Census of Agriculture data on farms by type are only reported by the number of farms. They are not reported by employment, income, or acreage.¹⁰

Why is it important?

Not all agricultural land is used in the same manner. Different types of farms have different economic potential and relationships with other natural resources including water and wildlife. Some lands may be less valuable (e.g., pastureland) and therefore more vulnerable to conversion for urban and suburban uses than other lands (e.g., cropland).

To see how land is being converted to residential development, create an EPS Land Use report at <https://headwaterseconomics.org/eps>.

Agriculture

Yellowstone County, MT

Wages and Employment

Wages*, 2016	Yellowstone County, MT	U.S.
Total Private & Public, (2017 \$s)	\$45,083	\$53,621
Total Private	\$44,354	\$53,515
Farm	\$35,958	\$33,073
Crop Production	\$43,330	\$31,587
Animal Production	\$33,409	\$36,288
Non-Farm	\$44,095	\$53,655

Percent of Employment*, 2016	Yellowstone County, MT	U.S.
Total Private	89.4%	84.9%
Farm	0.3%	0.6%
Crop Production	0.1%	0.4%
Animal Production	0.2%	0.2%
Non-Farm	88.5%	84.4%

* These tables show 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.

Wages and Employment

What do we measure on this page?

This page describes wages (in real terms) from farm employment compared to wages from non-farm employment. It also describes the percent of jobs in each category. These are shown together to illustrate the relative wage levels in farming (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.

Farm: All forms of agricultural production, including livestock operations.¹¹

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.^{12, 13}

Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Estimates for data that were not disclosed are indicated with tildes (~).

Why is it important?

Farm employment often pays below-average wage rates, but this can vary by farm sub-sector and by location.¹⁴ It is important to consider how farm industry wages compare to wages in other sectors, whether crop and animal production pay different wages, and whether there are significant wage differences between locations.

For more information on employment and wages in non-farm industries, create an EPS Socioeconomic Measures report at <https://headwaterseconomics.org/eps>.

Agriculture

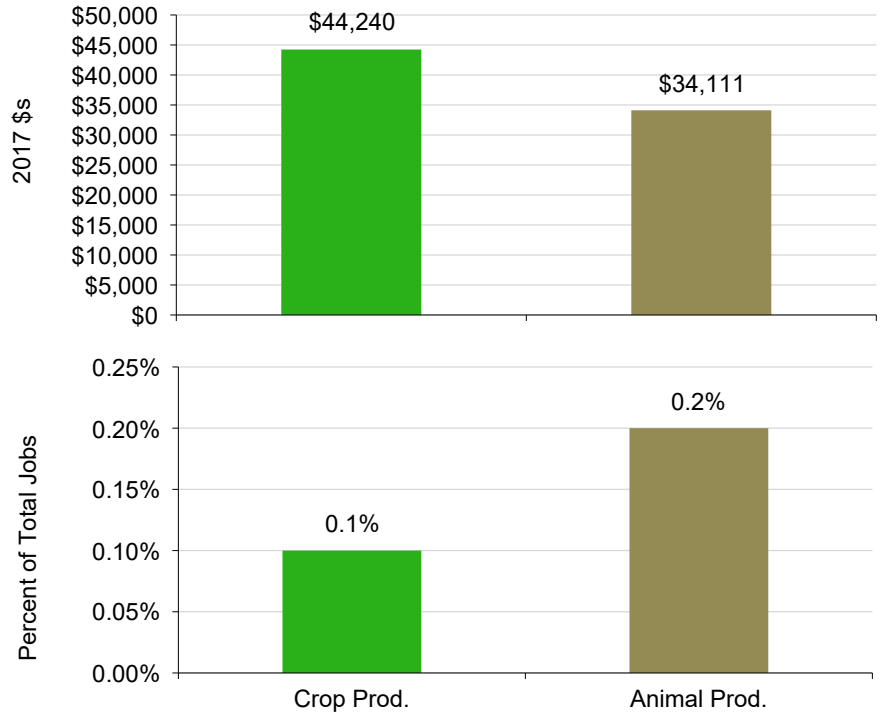
Yellowstone County, MT

Wages and Employment (cont.)

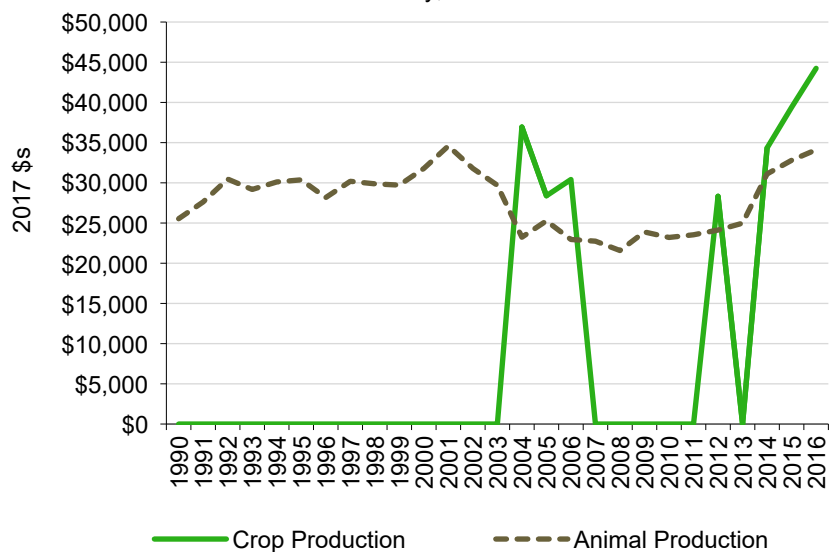
- In 2016, average annual wages in crop production were \$44,240 and average annual wages in animal production were \$34,111.

- In 2016, crop production jobs were 0.1 percent of total employment and animal production jobs were 0.2 percent of total employment.

Avg. Annual Wages & Percent of Total Employment in Crop & Animal Production, Yellowstone County, MT, 2016



Avg. Annual Wages in Crop & Animal Production, Yellowstone County, MT



- From 1990 to 2016, average annual wages in animal production grew from \$25,534 to \$34,111, a 33.6 percent increase.

Wages and Employment (cont.)

What do we measure on this page?

This page describes average wages (in real terms) and employment levels in crop and animal production. It also shows average wage trends (in real terms) for these farm sectors.

The chart Avg. Annual Wages & Percent of Total Employment in Crop & Animal Production is useful for describing how many people are working in relatively high- and low-wage farm sectors. The chart Avg. Annual Wages in Crop & Animal Production is useful for comparing wage trends by farm sector.

Farm: All forms of agricultural production, including livestock operations. The components of Farm on this page (NAICS 111 crop production and NAICS 112 animal production) do not include agricultural services (NAICS 115 support activities for agriculture and forestry) because this category mixes farm and non-farm services.

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.¹²

The chart Avg. Annual Wages in Crop and Animal Production starts in 1990 because this is the first year these wage data are available from the Bureau of Labor Statistics.

Depending on the locations selected, some data may not be available due to disclosure restrictions.¹⁵

Why is it important?

Not all components of the farm industry pay the same wages or employ the same number of people. It may be important to consider how farm industry wages compare to wages in other sectors, whether crop and animal production pay different wages, and whether there are significant wage differences between locations.

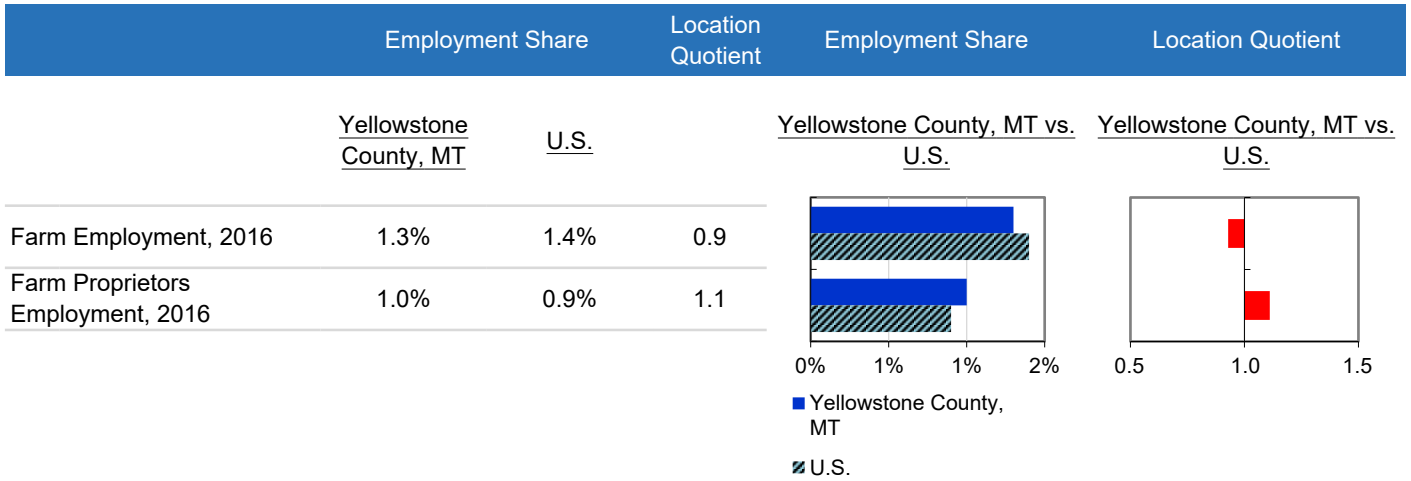
A significant increase in farm jobs that pay below the average for all industries will decrease overall average earnings per job. On the other hand, a significant increase in farm jobs that pay above the average for all industries will increase overall average earnings per job. A modest change in farm employment, especially when this industry is a small share of total employment, will not likely affect average earnings in a local area.

The Bureau of Labor Statistics' Quarterly Census of Employment and Wages data for industries is available at <https://www.bls.gov/cew/>; the Bureau of Labor Statistics' Occupational Outlook Handbook, which has detailed industry earnings and wages data at the national level, is available at <https://www.bls.gov/ooh/>; the U.S. Census Bureau's County Business Patterns database, which reports industry-level employment and payroll and can be used to estimate earnings, is available at <https://www.census.gov/programs-surveys/cbp.html>.

Agriculture

Yellowstone County, MT

Comparisons



- In 2016, farm proprietors employment, 2016 had the highest location quotient score (1.1) and farm employment, 2016 had the lowest (0.9).

Comparisons

What do we measure on this page?

This page describes whether the region is specialized in farm employment.^{1, 16} The chart illustrates the difference between the selected location(s) and the selected benchmark area. (If no custom benchmark area was selected, EPS defaults to benchmarking against the U.S.)

Location quotient¹⁷: A ratio that compares an industry's share of total employment in a region to the benchmark. More precisely, it is the percent of local employment in a sector divided by the percent employment in the same sector in the benchmark area. In other words, it is a ratio that measures specialization using the benchmark area for comparison. A location quotient of more than 1.0 means the local area is more specialized in that sector relative to the benchmark area. A location quotient of less than 1.0 means it is less specialized.¹⁸

Another way to think about location quotients is as a measure of whether a place 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 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 0.5 indicate a weak industry concentration (and that an area is likely importing goods or services).

Farm: All forms of agricultural production, including livestock operations.

Why is it important?

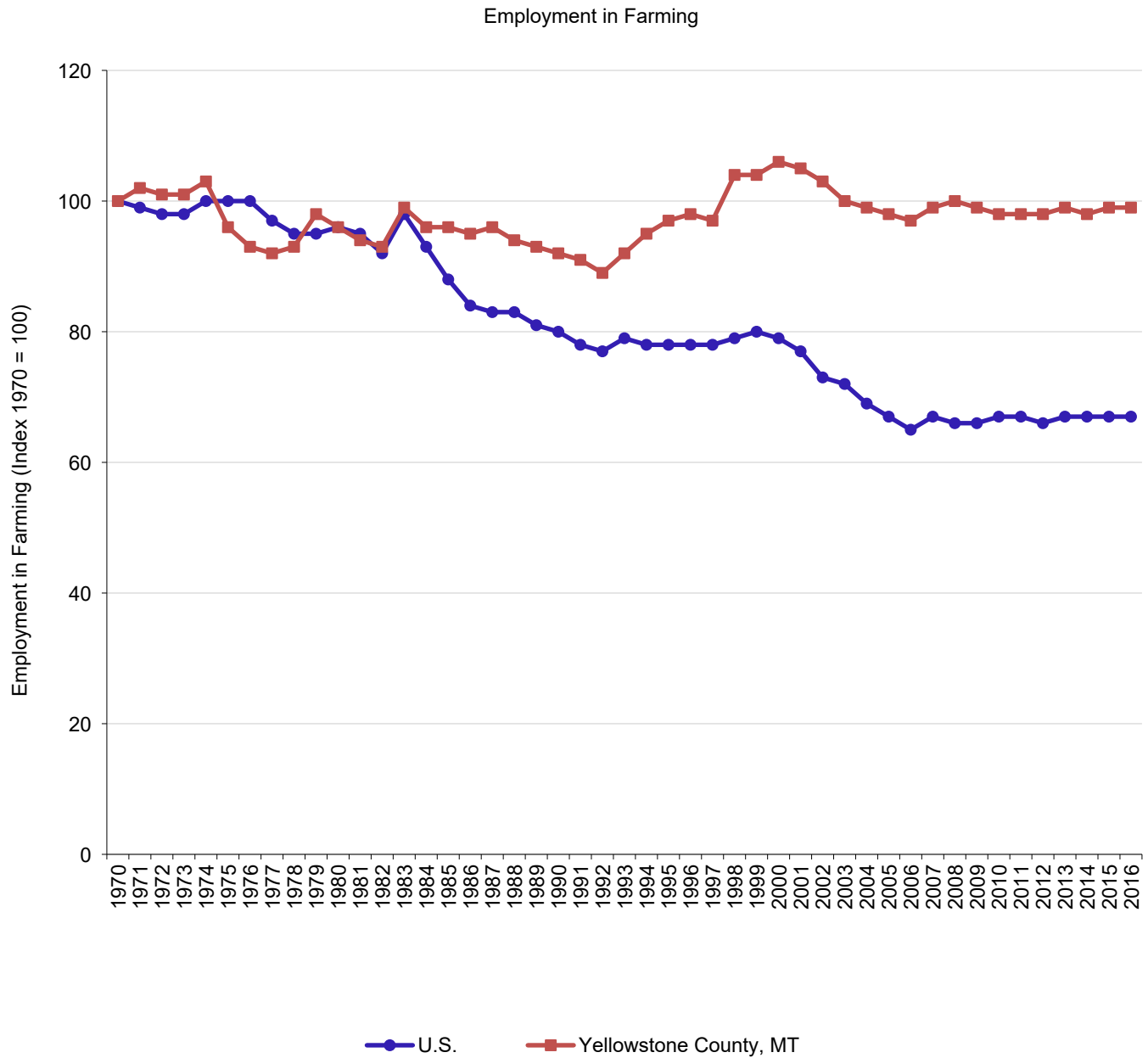
Agricultural employment in most parts of the U.S. has been declining, largely as a result of mechanization and other efficiencies of scale, for most of the last century. Nevertheless, it is still an important source of jobs in many places. This page shows a measure of importance (employment share) relative to the U.S.

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 can change from year to year. (4) LQs can vary when one uses income or wage data rather than employment.

Agriculture

Yellowstone County, MT

Comparisons Over Time



• From 1970 to 2016, Yellowstone County, MT had the fastest rate of change in farm employment and Yellowstone County, MT had the slowest.

Comparisons Over Time

What do we measure on this page?

This page describes the change in farm employment for all selected locations and the benchmark area. The information is indexed (1970=100) so that data from locations with different-sized economies can be compared and to make it easier to understand the relative rate of growth or decline of farm employment over time.^{1, 3}

Index: Indexed numbers are compared with a base value. In the line chart, employment in 1970 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. An indexed chart is used primarily to show relative rates of growth.

Farm: All forms of agricultural production, including livestock operations.

Why is it important?

Agricultural employment in most parts of the U.S. has been declining, largely as a result of mechanization and other efficiencies of scale, for most of the last century. However, this is not the case everywhere. In addition, not all locations have lost or attracted farm employment at the same rate.¹⁹ An index makes it clear where the rate of farm decline or growth has been the fastest. Lines below 100 indicate absolute decline while those above 100 show absolute growth. 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 the 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 local citizens to learn more about what caused abrupt changes.

Data Sources & Methods

This EPS Summary report uses national statistics from public government sources. All data used in EPS can be readily verified with the original sources:

- **Quarterly Census of Employment and Wages**
Bureau of Labor Statistics, U.S. Department of Labor
<https://www.bls.gov/cew>
Contacts
<https://www.bls.gov/bls/contact.htm>
- **BEA Regional Economic Accounts**
Bureau of Economic Analysis, U.S. Department of Commerce
<https://www.bea.gov/regional/>
Contacts
Contacts: <https://www.bea.gov/contacts/>
- **Census of Agriculture**
USDA National Agriculture Statistics Service
<http://www.agcensus.usda.gov>
Contacts
https://www.agcensus.usda.gov/Contact_Us/

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 areas 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 locations to allow for more sophisticated cross-sectional comparisons.

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 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 with tildes (~) in tables. Documentation explaining methods developed by Headwaters Economics for estimating disclosure gaps is available at <https://headwaterseconomics.org/eps>.

Endnotes

- 1 - The Economic Research Service of the U.S. Department of Agriculture provides a number of easy-to-use references on farm businesses, production, and employment: <https://www.ers.usda.gov/Publications>.
- 2 - Bureau of Economic Analysis data in this report describe only the employment and personal income of people working directly in agricultural operations and do not include the subcategory Forestry, Fishing, Related Activities, and Other (BEA line code 100). We do not include BEA line code 100 because it mixes farm-related categories (e.g., soil preparation) with non-farm-related categories (e.g., hunting). It is not possible to disaggregate BEA line code 100.
- 3 - For the Economic Research Service's outlook on farm commodities, see <https://www.ers.usda.gov/topics/farm-economy/commodity-outlook.aspx>.
- 4 - Detailed tables on farm income and expenses, such as how much is spent on hired farm labor, feed, fertilizer, and petroleum products, are available from the U.S. Department of Commerce at <https://www.bea.gov/regional/>.
- 5 - Long-term commodity prices can be found at the National Agricultural Statistics Service of the U.S. Department of Agriculture: https://www.nass.usda.gov/Charts_and_Maps/Agricultural_Prices/index.php.
- 6 - Economic Research Service, USDA: <https://www.ers.usda.gov/>.
- 7 - The Census of Agriculture can be viewed at <https://www.agcensus.usda.gov/>.
- 8 - The Economic Research Service of the U.S. Department of Agriculture provides a website on major land uses: <https://www.ers.usda.gov/data-products/major-land-uses.aspx>. To browse Economic Research Service publications by topic, see <https://www.ers.usda.gov/topics.aspx>.
- 9 - The Census of Agriculture can be viewed at <https://www.agcensus.usda.gov/>.
- 10 - A description of the form used in the 2012 Census of Agriculture, and definitions of terms, is available at https://agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_US/usappxb.pdf.
- 11 - What we show as Farm in the tables on this page is the sum of the following NAICS codes: crop production (111) and animal production (112). It does not include NAICS code 115 (support activities for agriculture and forestry) because this category mixes farm and non-farm services.
- 12 - For an overview of how the Bureau of Labor Statistics treats employment, see <https://www.bls.gov/bls/employment.htm>. For an overview of how the Bureau of Labor Statistics treats pay and benefits, see <https://www.bls.gov/bls/wages.htm>.

Endnotes (cont.)

- 13- Employment and wage estimates are also available from the Bureau of Labor Statistics for over 800 occupations. Looking at farming by occupation, rather than by sector or industry, is helpful since wages can vary dramatically across occupations. For more information on the most recent employment and wage estimates for Agriculture, Forestry, Fishing and Hunting (NAICS 11) by occupation, see <https://www.bls.gov/oes/>.
- 14- The Census of Agriculture website provides county-level farm data. See <https://www.agcensus.usda.gov/>.
- 15- If there are significant undisclosed data on this page, options for accessing wages data for farm sectors include: The Bureau of Labor Statistics' Quarterly Census of Employment and Wages data for industries (<https://www.bls.gov/cew/>); the Bureau of Labor Statistics' Occupational Outlook Handbook, which has detailed industry earnings and wages data at the national level (<https://www.bls.gov/ooh/>); and the U.S. Census Bureau's County Business Patterns database, which reports industry-level employment and payroll and can be used to estimate earnings (<https://www.census.gov/programs-surveys/cbp.html>).
- 16- 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; and Malizia EE and K Shanzai. 2006. "The Influence of Economic Diversity on Unemployment and Stability." Journal of Regional Science 33(2):221-235.
- 17- $LQ = (e_i/e) \text{ divided by } (E_i/E)$
Where: e_i = Local employment in industry i ; e = Total local employment; E_i = U.S. employment in industry i ; E = Total U.S. employment.
- 18- A succinct definition of a location quotient is offered by Indiana Business Research Center at IU's Kelley School of Business. See <http://www.incontext.indiana.edu/2006/march/1.asp>.
- 19- The Bureau of Labor Statistics provides an overview and outlook for farm occupations: <https://www.bls.gov/ooh/management/farmers-ranchers-and-other-agricultural-managers.htm>.