

Spokes in a Wheel:

A Comparison of Montana's Industries by Christopher Bradley, Economist



Montana's economy is a complex network of intertwined industries that function together to allocate resources among the people. Like spokes in a wheel, every industry plays a part in keeping the economy rolling. While each has its own critical function, people often ask, "What is Montana's number one industry?" Unfortunately, there is no easy answer because no single industry can function without the others, and no industry is number one in all metrics. In fact, a diverse industry mix that doesn't rely too heavily on any single industry results in a more resilient and stable economy. This article ranks Montana's industries using various economic metrics and illustrates the industrial diversity that makes Montana's economy strong.

GROSS DOMESTIC PRODUCT (GDP)

One way to measure the economic contribution of one industry relative to others is to calculate the total value of all goods and services produced, a measure known as Gross Domestic Product (GDP). GDP is one of the most commonly used measures of economic activity. The U.S. Bureau of Economic Analysis releases quarterly GDP estimates of each industry's contribution to Montana's total GDP.

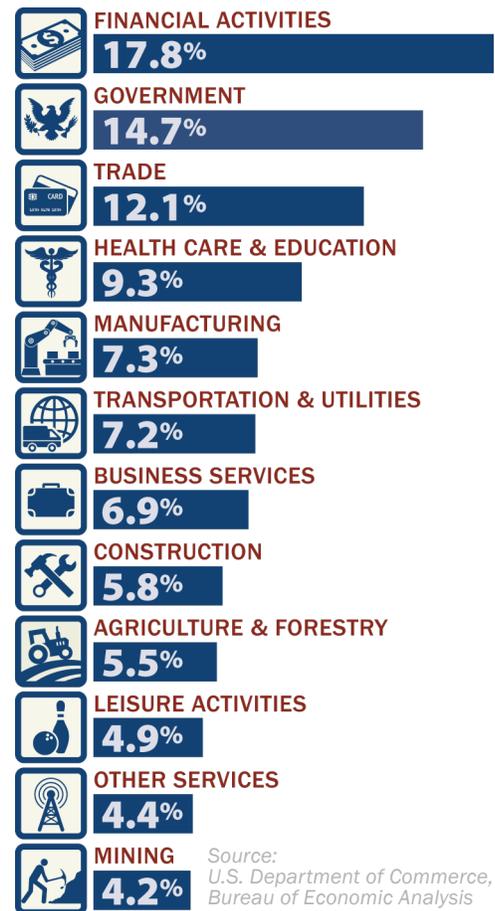
According to the most recent data available, the industries with the largest share of Montana's GDP were Financial activities, Government, and Trade. The Financial activities industry provides a large share of GDP because of the nature of the businesses it includes. Car insurance, health insurance, investments, banking and other services that nearly all consumers use are part of the financial activities industry and make it the largest industry by GDP. The share of GDP from the financial activities sector is slightly smaller in Montana than in the U.S. overall.

The second largest industry, Government, includes all levels of the public sector from the local level (city and county administration plus local school districts) to federal (such as National Parks, Forests, Postal Service and Veterans Affairs).

The industries contributing the least to GDP were Mining, Other (which includes Information and Other services), and Leisure activities. Mining's overall contribution to the GDP is lower than it has been in the past due to the recent decline in commodity prices, including oil.

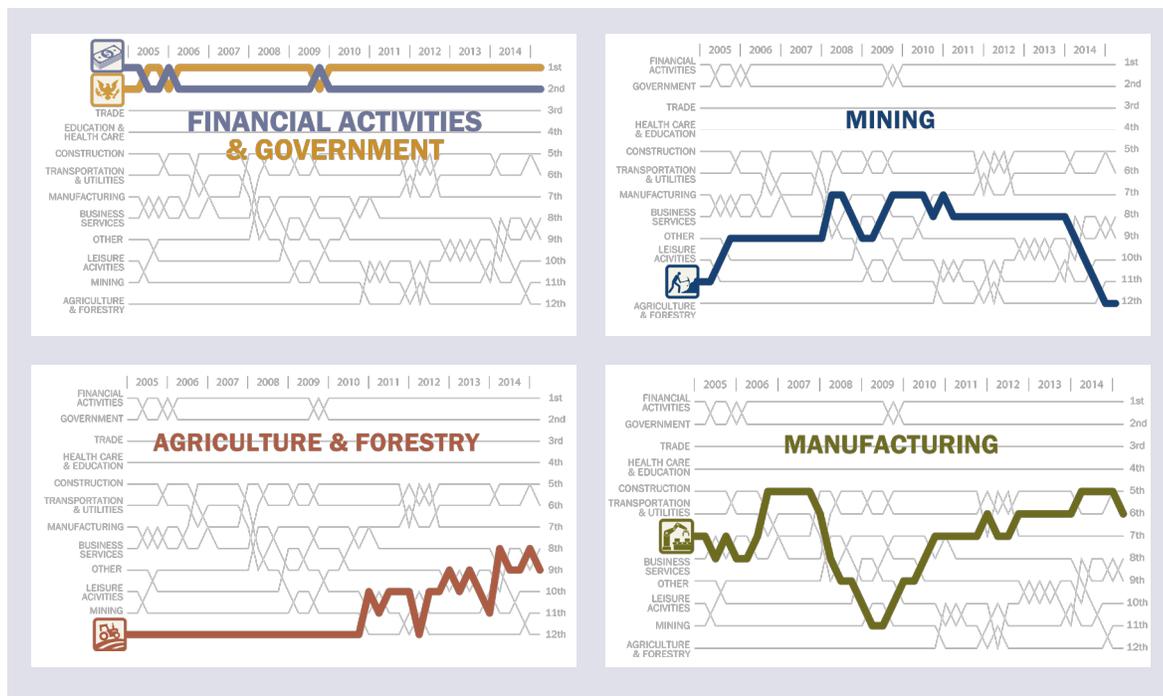
Figure 1: Industry GDP Share

3rd Quarter 2014 to 2nd Quarter 2015



Montana's top industries for GDP rank fairly consistently across time (see Figure 2). The financial activities industry surpassed government in the mid-2000s and stayed there, with the exception of one year during the recession. However, the industry rankings have fluctuated a lot for those ranked lower, reflecting structural trends and economic volatility.

Figure 2: Industry GDP Rank over Time - 2005 to 2015



Source: U.S. Department of Commerce, Bureau of Economic Analysis

Several factors led to an expansion of the Mining industry throughout the 2000s. Economic expansion in the U.S. and internationally led to increased demand and high prices for the natural resources available in Montana. However, over the last few years, low commodity prices have led to a reversal in the trajectory of the industry, with its rank dropping to the bottom over the last year. Over the same period of time, the manufacturing industry faced a sharp decline in output during the recession and has rebounded since then. Agriculture, which was ranked at the bottom of GDP contribution through 2010, has shown success in recent years, increasing its ranking from 12th to 9th.

The volatility among the rankings leads to one main takeaway: unpredictable economic forces can lead to success and misfortune for any industry, making no single industry the most important. Instead, a diverse mix of economic output from a number of industries ensures that Montana’s overall economy can withstand adverse external forces.

PERSONAL INCOME

Personal income is another measure used to compare industries. While GDP reflects the output that each industry contributes to the economy, personal income measures the portion of that output that is returned to the people of Montana either through work earnings or

income from investments. An industry with high GDP is good, but of equal importance is how much of that value ends up in the hands of Montanans who can reinvest the income locally through the purchase of goods and services, or through investments into local communities or business ventures.

The two industries with the greatest share of Montana’s personal income are virtually identical in size. State and local government matches Health care and education, with each industry accounting for roughly 14.2% of personal income. Following that, Trade and Business services are the next largest contributors to personal income.

The size of an industry’s personal income contribution depends on its GDP share because personal income is a subset of GDP. Yet, there can be significant differences between these measures depending on the proportion of money that is captured by Montanans rather than flowing out of the state. Most notably, the Financial activities industry makes up about 17% of GDP, but is only 6% of personal income. Most of the value produced by this industry is realized by out-of-state stakeholders, not by Montana workers and business owners. In contrast, the Health care and education industry accounts for only 9.3% of GDP, but 14.2% of personal income.

These differences are mainly due to three factors: how labor intensive the industry is, where corporate profits are realized, and how profits are spent. For example, the Health care and education industry not only requires a large number of doctors, nurses, and other staff, but also pays employees well. The high labor costs ensure that a greater portion of the GDP remains within the state, and puts the Health care and education industry at near the top of personal income rankings.

Another interesting example is the Manufacturing industry, which has a relatively low share of personal income compared to its GDP contribution. In the Manufacturing industry, a larger share of the value obtained through its output is likely to be reinvested in expanded operations, capital investments, or research and development.

EMPLOYMENT AND WAGES

The ranking of industries differs if comparing overall economic activity or personal income. Some industries produce more output, in terms of value, while others return more output to Montana workers and investors. One more tool to rank Montana's industries is payroll employment and wages from the Quarterly Census of Employment and Wages (QCEW). There are some caveats to using QCEW data when assessing Montana's industries. The QCEW comes from payroll data and only includes workers who are covered by Unemployment Insurance (UI). Workers who are self-employed and non-UI covered workers (such as railroad workers) do not appear in the data.

Figure 4: Average Wage and Employment Share Ranks of MT's Industry Sectors, 2014

Annual Average Wage	Rank	Employment Share
\$88,500 MINING	1 st	GOVERNMENT 18.7%
\$50,810 FINANCIAL ACTIVITIES	2 nd	TRADE 16.9%
\$49,662 TRANSPORTATION & UTILITIES	3 rd	HEALTH CARE & EDUCATION 15.5%
\$46,472 BUSINESS SERVICES	4 th	LEISURE ACTIVITIES 13.7%
\$46,209 CONSTRUCTION	5 th	BUSINESS SERVICES 8.9%
\$45,724 MANUFACTURING	6 th	CONSTRUCTION 5.7%
\$43,283 GOVERNMENT	7 th	OTHER 5.2%
\$41,141 HEALTH CARE & EDUCATION	8 th	FINANCIAL ACTIVITIES 4.6%
\$35,054 AGRICULTURE & FORESTRY	9 th	MANUFACTURING 4.3%
\$32,869 TRADE	10 th	TRANSPORTATION & UTILITIES 3.5%
\$31,945 OTHER	11 th	MINING 2.0%
\$16,730 LEISURE ACTIVITIES	12 th	AGRICULTURE & FORESTRY 1.1%

Source: U.S. Bureau of Labor Statistics and Montana Department of Labor & Industry, Quarterly Census of Employment and Wages.

Figure 3: Share of Earnings by Industry
4th Quarter 2014 to 3rd Quarter 2015



Source: U.S. Department of Commerce, Bureau of Economic Analysis

The industry in Montana with the highest annual average wage is Mining, followed by Financial Activities, Transportation & Utilities, and Business Services. The Mining industry pays an average of \$88,500 per worker, approximately \$38,000 higher than the next highest average wage. Industries with high wage jobs provide important discretionary income to workers that allow for them to purchase goods such as homes and cars, and services such as financial advice or dinner in a restaurant, all of which benefit other industries and the economy overall. In terms of the share of employment, Government is the largest employer with nearly 19% of all employment, followed by Trade, Health care and education, and Leisure activities. While some of the larger employing industries fall lower

Figure 5: Montana Share of Stable Jobs - 2014



Source: U.S. Census, Quarterly Workforce Indicators

Figure 6: Montana Share of Stable Jobs by Worker Age - 2014



Source: U.S. Census, Quarterly Workforce Indicators

in the rankings with regards to average wages, providing income to large numbers of people is also important to Montana’s economy.

JOB STABILITY

It is also worthwhile to consider the quality of jobs that each industry provides. The wage of a job is one way to measure its quality, another important factor is its stability. People benefit greatly not only from jobs that pay a lot of money, but also jobs with consistency. Consistency in work and pay allows workers to plan spending or saving decisions. To measure job stability, the U.S. Census Bureau provides a measure of the number of “stable” jobs in its Quarterly Workforce Indicators. A stable job is one that lasts at least a full quarter, indicated by the job appearing in three consecutive quarters of wage records.

Job stability appears to be more common in the Health care and education, Trade, and Business services industries, all of which have a higher share of stable jobs than the total. Government’s share of stable employment is notably low, mainly due to employment in teaching professions that don’t show up on payrolls in the summer. Interestingly, the Leisure activities industry, which is highly seasonal, has a similar employment share of stable jobs to total jobs.

Employment in stable jobs also varies by age group. For young people, Leisure activities is the highest-employing industry, likely due to flexible scheduling and lower work

experience requirements. In this regard, Leisure activities is a very important industry, one that provides early work experience essential to developing a good work ethic and habits that will be used throughout a worker’s career.

Differences in employment by age can also be seen in the Construction industry, which employs a higher share of workers aged 25 to 44, and a lower share of older workers. An opposite trend exists in some industries such as Financial activities, which employ a larger share of older workers. Each industry provides a different set of opportunities to workers depending on their age, work experience, and other factors. To provide opportunity for all workers, a diverse mix of industries is necessary.

FINAL RANKINGS

Looking at the ranking of Montana’s industries, no industry ranks at the top of every metric. Financial Activities has the highest GDP, Health care and education provides the most stable employment, and Mining has the highest wages. Even among those industries that aren’t at the top, their rankings vary from low to high depending on what metric you use and when you compare them. This variation results from every industry having its strengths and weaknesses. The diverse industry mix in Montana allows the strengths of each industry to cover the weaknesses of others and lends itself to a stable and strong economy that is resilient to external pressures.