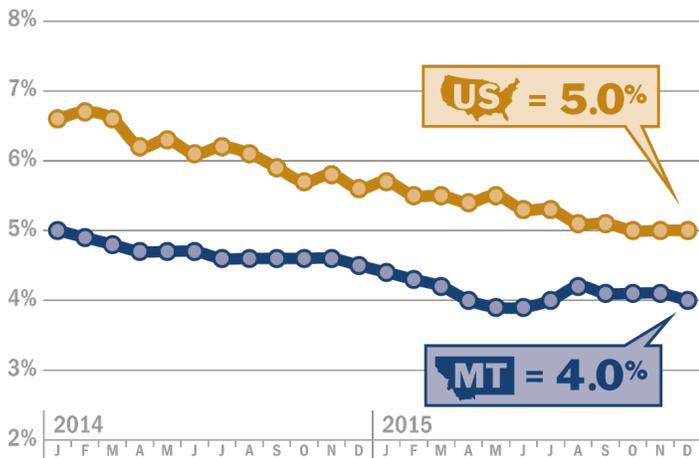


MONTANA Economy at a Glance

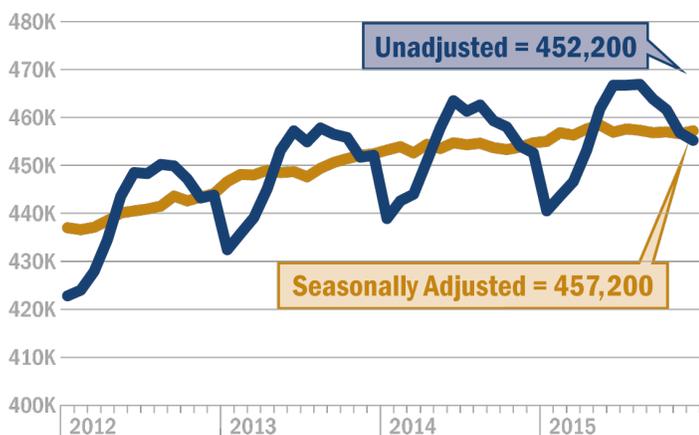
DECEMBER 2015

UNEMPLOYMENT RATE *Seasonally Adjusted*



Montana's seasonally-adjusted unemployment rate for December 2015 decreased slightly over the month, moving to 4.0% from November's revised rate of 4.1%. Meanwhile, the national unemployment rate held steady at to 5.0% over the month.

NON-FARM EMPLOYMENT *In Thousands*



EMPLOYMENT BY INDUSTRY *In Thousands*

INDUSTRY EMPLOYMENT	DEC. 2015 (PRELIM)	NOV. 2015	NET CHANGE	% CHANGE
Total Non-Agricultural	457.2	456.6	0.6	0.1%
Natural Resources & Mining	8.4	8.6	-0.2	-2.3%
Construction	25.8	25.0	0.8	3.2%
Manufacturing	19.0	18.8	0.2	1.1%
Trade, Transportation, & Utilities	94.8	95.2	-0.4	-0.4%
Information	6.2	6.4	-0.2	-3.1%
Financial Activities	26.7	26.9	-0.2	-0.7%
Professional & Business Services	39.7	39.9	-0.2	-0.5%
Education & Health Services	71.2	71.1	0.1	0.1%
Leisure & Hospitality	58.4	58.4	0.0	0.0%
Other Services	18.7	18.2	0.5	2.7%
Total Government	88.3	88.1	0.2	0.2%

Note: Excludes self-employed and agricultural employment

Montana's seasonally-adjusted, non-agricultural payroll employment increased by 600 jobs (+0.1%) over the month, for a total of 457,200 for December 2015. The largest industry employment gain occurred in construction, with 800 added jobs (+3.2%). The largest losses occurred in trade, transportation, and utilities, with 400 fewer jobs (-0.4%) over the month.



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Examining Montana's Wages

by Barbara Wagner, Chief Economist



Montana's average wage growth has outpaced the national average and most other states in recent years, with the 6th fastest wage growth among states from 2004 to 2014. Yet even with above average growth, Montana's wages remain comparatively low. In 2014, Montana's average annual wage of \$38,874 ranked 47th out of 50 states, ahead of only Mississippi, Idaho, and South Dakota. Recent growth has improved our ranking, moving from 48th to 47th in 2012, but Montana workers would still like to see higher wages. Higher wages would not only improve the standard of living for workers and their families, it would also lead to increased demand for many Montana-made goods and services through higher consumer spending.

The January 2015 edition of Montana Economy at a Glance (available at lmi.mt.gov/Publications in the Articles menu) explored Montana's wage ranking and how it changed when considering benefits, hourly wages, wage dispersion, and hours worked. In summary:

- Montana got to its low wage rank after more than half a century of slower wage growth than the nation from around 1950 to 2000.
- Since 2000, Montana's wages have been catching up, but it will take considerable time to overcome the long history of comparable wage decline.
- Montana's wage ranking does not improve when including benefits or adjusting for cost-of-living, but the state's hourly wages are more comparable to the nation.
- Montana also ranks much better when considering per capita income, which includes sources of income like self-employment or rental income.
- Montana's low-wage workers earn similar wages to low-wage workers in other states, but we fall behind for high-wage jobs.

This article continues to examine the issue of Montana's low wages by looking at some of the factors that determine wages. From a macroeconomic viewpoint, wages are determined by supply and demand, with wages rising when workers become in short supply. In this simplified scenario, Montana's wages are low because our job growth

is not increasing fast enough compared to our labor supply to support higher wages. This macroeconomic perspective is certainly not wrong. Montana's current above-average wage growth is primarily driven by our low unemployment rate. Our expected worker shortage will continue to create wage growth in future years as job growth continues and workers become in short supply.

However, the supply and demand explanation oversimplifies Montana's complex and unique economy. Identifying how Montana's businesses and workers differ from those in other states can both explain the wage disparity, and suggest economic development goals to increase wages. Not all of the factors depressing wages can be addressed (and some we like just the way they are), but there are strategies to help mitigate the negative influences while retaining our Montana way of life.

INDUSTRY MIX

Montana's industry mix is often identified as a contributor to the state's low wages. Montana has a high employment concentration in the leisure services industry, which tends to have both low wages and a high share of part-time employment. The leisure services industry includes hotels, restaurants, bars, movie theaters, ski resorts, and some tourism-related businesses. Leisure services accounted for 16.8% of Montana's employment in 2014,

compared to 12.6% nationally. **Figure 1** illustrates each industry’s share of private employment for Montana and the U.S. The industries are sorted by the average hourly wage, in ascending order. Montana has a greater share of employment than the U.S. in some of the lowest-paying industries, such as leisure services and retail and wholesale trade, and a smaller share in the highest-paying industries, like professional services.

In addition to offering relatively lower hourly wages, the retail and leisure services also have a high level of part-time workers. Per job, Montana has the shortest average work week in the nation at 32.8 hours.¹ This does not imply that Montanans don’t work hard. When multiple jobs and self-employment are considered, the average Montanan works 38.1 hours per week, roughly in the middle of states.² The statistic of a short work week indicates a high level of part-time work in Montana.

Montana’s industry mix results in both a lower hourly wage and fewer hours worked in each job, reducing the average amount paid per job. However, industry mix doesn’t explain everything. As illustrated by **Figure 1**, Montana’s wages are lower in every industry. Even if

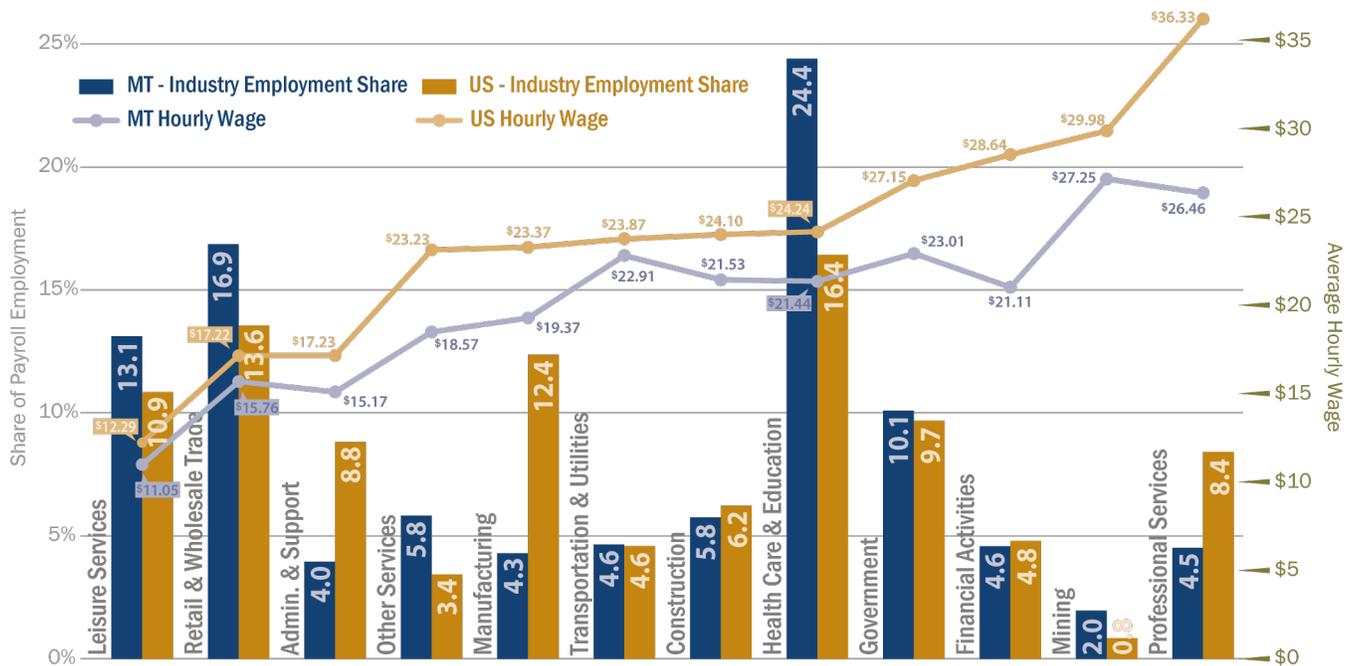
Montana’s industry mix was exactly the same as the U.S., our wages would still be lower because of the lower hourly wages. The same is true for the number of hours worked; Montana’s average work week is shorter than the nation’s in every private industry except education and healthcare. While industry mix partially explains Montana’s low wages, it is not the full story.

THE LAST BEST PLACE AND BUSINESS SIZE

Another contributor to Montana’s low wages is the prevalence of small businesses. In general, larger businesses tend to pay higher wages and provide better benefits than smaller businesses. Larger businesses can achieve economies of scale, which means that the cost of producing a single unit is lower due to mass production. Because economies of scale result in reduced production costs at the same product price, a greater profit can be shared with workers through higher wages. **Figure 2** displays the average weekly wage paid in the first quarter of 2015 by business size in Montana, illustrating the higher wages paid by larger businesses. U.S. workers employed in an establishment with 500 or more workers earn nearly twice as much as a worker in a business of

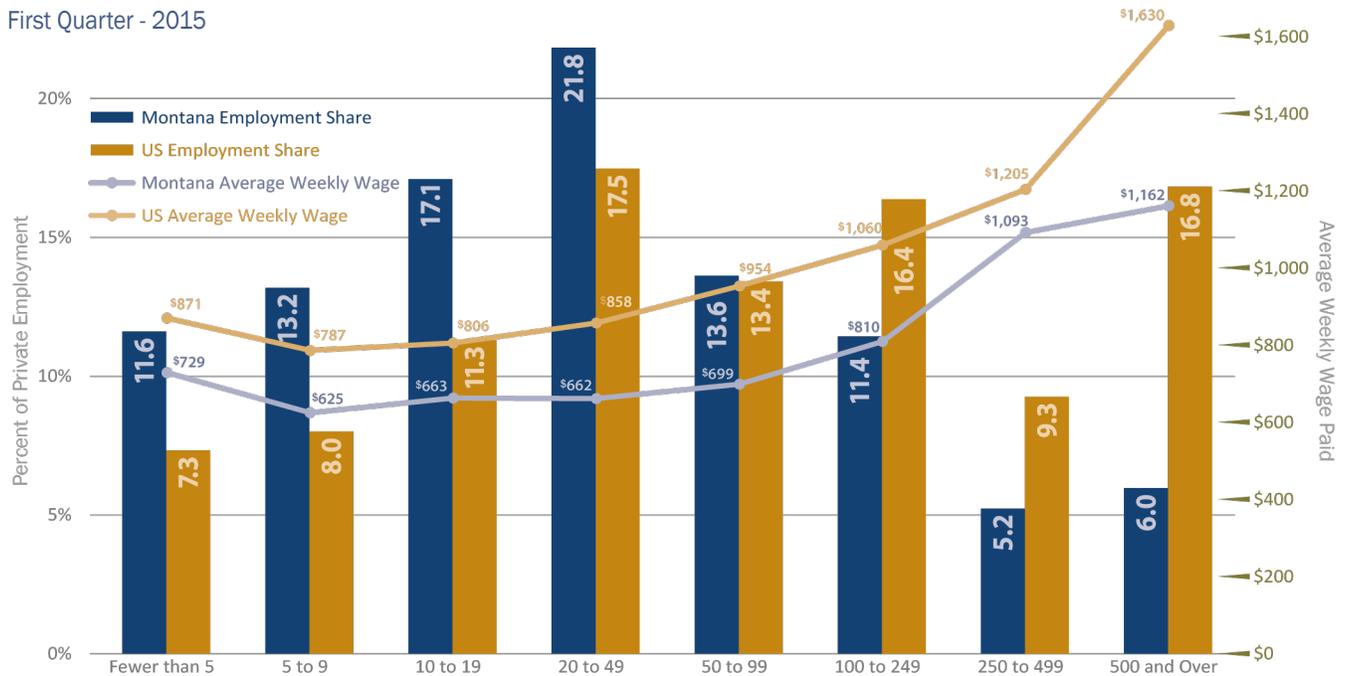
Figure 1 Share of Private Employment by Industry

Organized by U.S. Average Hourly Wage



Source: Occupational Employment Statistics, 2014, Montana Department of Labor & Industry

Figure 2: Share of Employment and Average Weekly Wage by Business Size
 First Quarter - 2015



Source: Quarterly Census of Employment and Wages, First Quarter 2015. MT over 500 wage level imputed.

10 to 19 employees. The wage premium for Montana large businesses makes a slightly flatter curve, increasing less as the size of the business increases, but workers in businesses with 500 or more workers make 75% more than workers in small establishments of 10 to 19 employees.

Montana has few large businesses, with only 0.8% of establishments employing 100 workers or more, compared to 1.9% of U.S. businesses at this size. While the difference may not seem great in terms of share of businesses, the employment share is another story. Over 42% of U.S. workers are employed by a business with 100 or more employees, compared to only 22.6% in Montana. As **Figure 2** illustrates, the share of employment for each business size class differs greatly between the U.S. and Montana, with the exception of mid-sized businesses with 50 to 99 employees.

Montana businesses tend to be smaller because of our low population density. Montana’s population is not concentrated into one large urban area like it is in many other rural states. Instead, Montana has seven relatively small cities, with very small pockets of potential customers in between. Because of the widely dispersed population,

businesses often opt for several small offices rather than one centralized office, resulting in smaller business size. There are also fewer customers in Montana compared to more populated areas, reducing the need for larger production.

The decentralization of businesses in Montana can also increase operating costs of businesses and prevent economies of scale from forming. It can be challenging for managers to maintain consistent service, performance standards, and hiring across multiple locations, requiring each business to put extra resources into business organization, not to mention requiring lots of travel for managers. Goods producers generally retain centralized manufacturing, but still face challenges selling to widespread customers and face higher transportation costs. As a landlocked state, manufacturers and other businesses that produce and ship physical goods overseas face longer distances to major ports and consumer markets than their global competitors.

While we love our wide open spaces, the transportation costs put downward pressure on Montana wages. Unless businesses find ways to differentiate their product in a

niche market, they face the same prices as businesses from other states, but higher transportation and operating costs. Capital is more mobile than labor, and investors would quickly seek out better investments in other states if they were getting lower returns from Montana businesses. Therefore, businesses compensate for higher transportation costs through lower wages. Unfortunately, it is difficult to obtain sufficient data on transportation costs to fully explore their wage impact. However, if high transportation costs depress our wages, a greater economic development focus on nontangible goods and services requiring only online delivery may relieve some of the downward pressure.

EDUCATION LEVEL OF THE WORKFORCE

In microeconomic wage theory, a worker’s wages are equal to the value the worker contributes to the company. A business will be willing to pay a worker up to the amount the worker contributes to the company, and the worker will not accept less than what would be offered by a different employer. While wages are often influenced by other factors unrelated to a worker’s output, such as race and gender, more productive workers generally earn more.

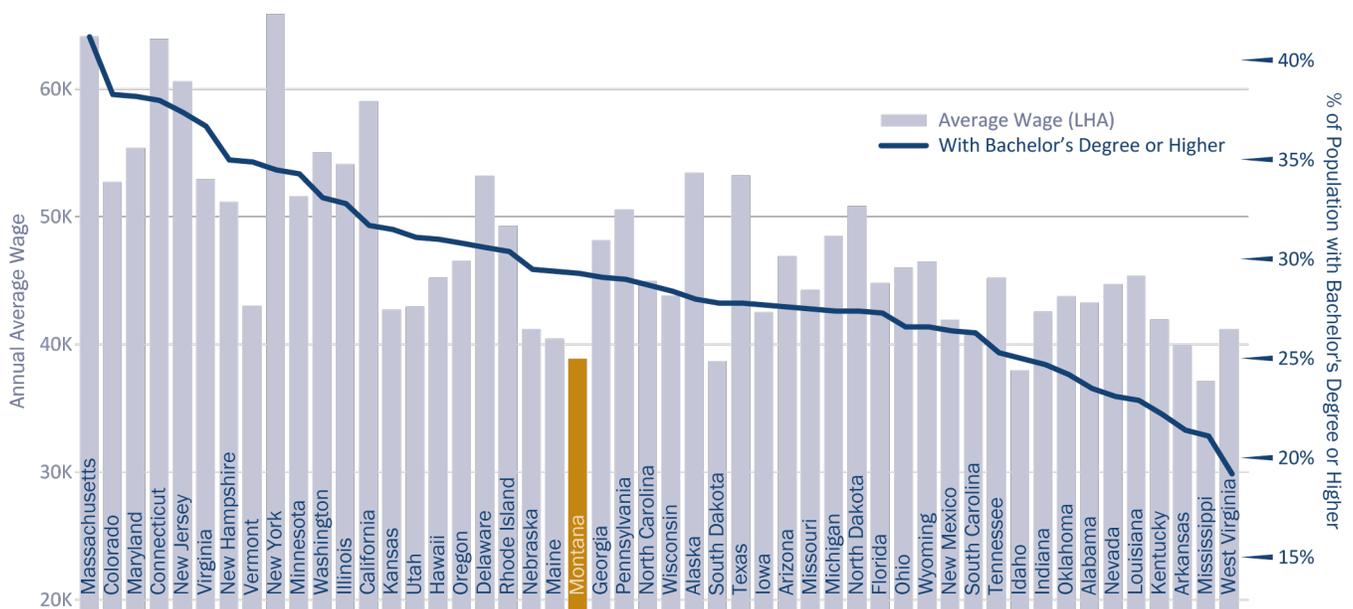
Education Level - Population aged 25+

	US	MT	Montana Rank
High School Diploma (or equivalent)	86.9%	92.6%	3rd
Bachelor’s Degree	30.1%	29.3%	22nd
Advanced Degree	11.4%	9.8%	30th

Education is one of the most reliable predictors of worker productivity. Workers with higher levels of education and training are generally more productive and earn higher wages than those with lower levels of education and skills.

In terms of secondary education, Montana has a very well-educated workforce. Montana ranks third among states for percentage of the population over 25 with a high school diploma (or equivalent). Montana also bests the national average with 92.6% of the population completing a high school (or equivalent) education compared to 86.9% nationally. However, Montana doesn’t fair quite as well in post-secondary and advanced degrees.

Figure 3: Average Annual Wages and Percent of the Population with a Bachelor’s Degree
Population age 25 and older



Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages. U.S. Census Bureau, 2014 1-year ACS estimates.

Montana ranks 22nd in the nation for percent of the population with a bachelor’s degree or higher, with 29.3% of our population over 25 meeting this threshold compared to 30.1% of the U.S. population. For advanced degrees, Montana ranks 30th with 9.8% holding a master’s, doctoral, or professional degree compared to 11.4% nationally.³ While Montana outperforms our neighboring states for both bachelor’s degree and advanced degree attainment, a lower postsecondary education level than the nation likely contributes to comparatively lower wages.

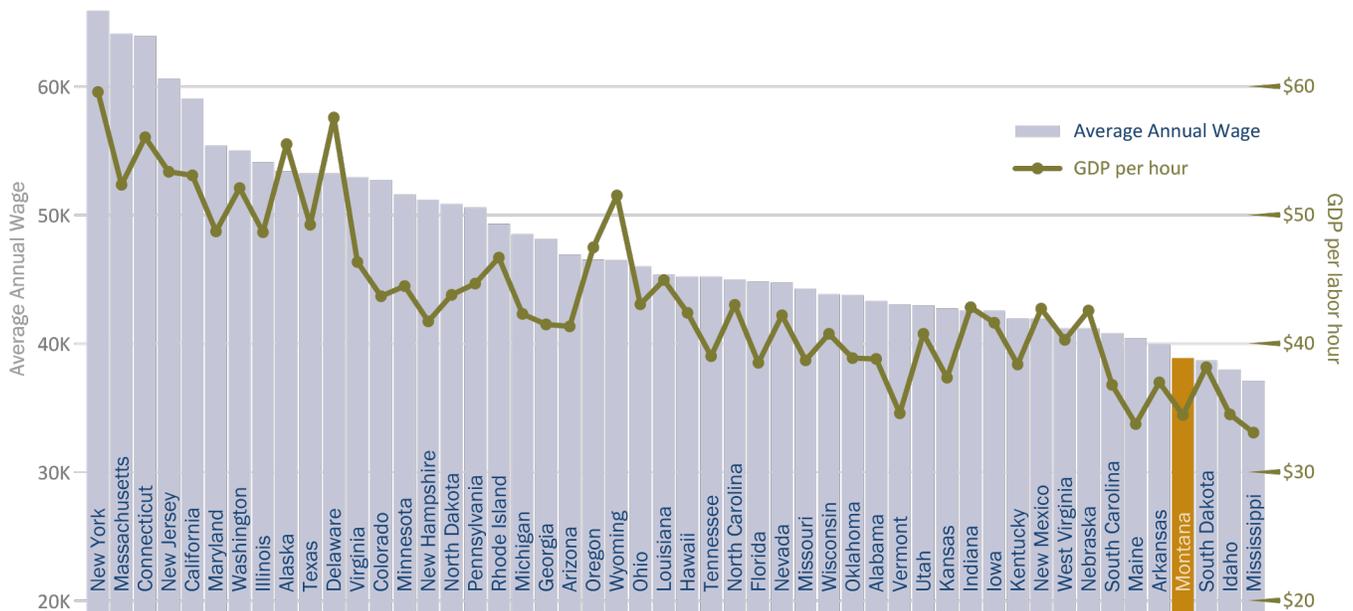
Figure 3 illustrates the strong correlation between educational attainment and average wages, with the average wages for each state shown, but sorted by the level of educational attainment. States with higher educational attainment levels tend to have higher average wages, consistent with economic theory. However, the correlation is not exact. Montana’s wages are lower than what would be expected given only education levels. Georgia and Pennsylvania have educational attainment levels slightly below Montana’s, but have significantly higher wages. Education of the workforce is an important component to the wage puzzle, but other factors are at play.

ALL FACTORS COMBINE TO HAMPER PRODUCTIVITY

The wages of an individual worker, and of the Montana workforce in aggregate, correlate directly with their productivity. Labor productivity is a measure of how efficient workers are at producing output, as is measured by the amount of **Gross Domestic Product (GDP)** produced per labor hour.⁴ Montana’s workforce produces roughly \$34.40 of GDP per labor hour worked, which is the third lowest amount among all states. In comparison, the average U.S. worker produces about \$46.20 of GDP per labor hour. Economic theory explains that businesses pay workers according to their productivity level – workers that are more productive add more value to the business, and therefore will be paid more by the business. In other words, Montana’s low wages are due to low labor productivity. **Figure 4** illustrates the relationship between labor productivity and average wages, with Montana ranking low for both metrics.

Labor productivity is not about working harder, but working smarter. Productivity measures the efficiency and profitability of each hour of work, and is largely determined by the tools, technology, and methods used by the worker and the business. For example, a farmer

Figure 4 GDP per Worker Hour and Average Annual Wage - 2014



Source: BLS, QCEW. GDP per hour by MT Dept of Labor & Industry, 2014 using BEA and Census data.

using GPS-assisted driving while seeding with a 40-foot air seeder seeds more acres in an hour than a gardener who sows by hand with a trowel. Further, the technology of the air seeder ensures that each seed is placed at the exact right depth with the right nutrients to maximize crop yield, thus increasing the profit from each acre. Labor productivity is also improved by increasing education levels, using more efficient business practices, reducing operational costs, and all of the other factors that help a business produce more with less.

There is some evidence that Montana lags behind other states in the adoption of computer technology, which may help explain the state's low productivity measurement. The adoption of desktop computing in the U.S. during the late 1980s and 1990s resulted in large increases in labor force productivity levels in the U.S. as a whole, and was the primary driver of real wage growth during that period. Montana's share of workers in computer and information technology jobs is relatively low, at 1.7% compared to 2.8% in the U.S. in 2014.⁵ Further, Montana is ranked one of the lowest states for broadband access and speeds, which may constrain our technology growth.⁶ If low computer technology adoption is among the causes of low productivity, further economic growth in this area would likely benefit not just workers within IT jobs, but also those in other industries by providing better access to tools and techniques that would improve labor productivity.

Other factors that impact productivity can be inherent to a particular industry. This means that some industries are, by their nature, more productive than others, which can influence overall productivity. For example, Montana's high concentration in health care (an industry known for low productivity growth) likely reduces our overall productivity levels. In fact, all of the items discussed in this article, including worker education levels, business size, remoteness, and even the average hours worked (and lower experience levels) influence Montana's productivity levels.

CONCLUSION

Wages in Montana are lower than wages in other states because our labor productivity is lower than in other states. But this answer, just like the macroeconomic discussion of supply and demand, is more complicated than it seems. Our lower productivity is a result of multiple factors, including the issues discussed in this article and more. Some factors, like our wide open spaces, rural nature, and distance to major consumer markets or ports, cannot be changed, and most of us don't want to change them. But there are ways to reduce the negative impacts on wages. For example, greater networking across cities and between industries would improve the adoption of technology and best practices by businesses, improving productivity growth. Greater access and use of technology could help us reduce travel costs and ship goods more cheaply. There are also factors that can be changed, like increasing the education and training in our workforce, and working to make sure each trained worker is in a job that fully utilizes their skills.

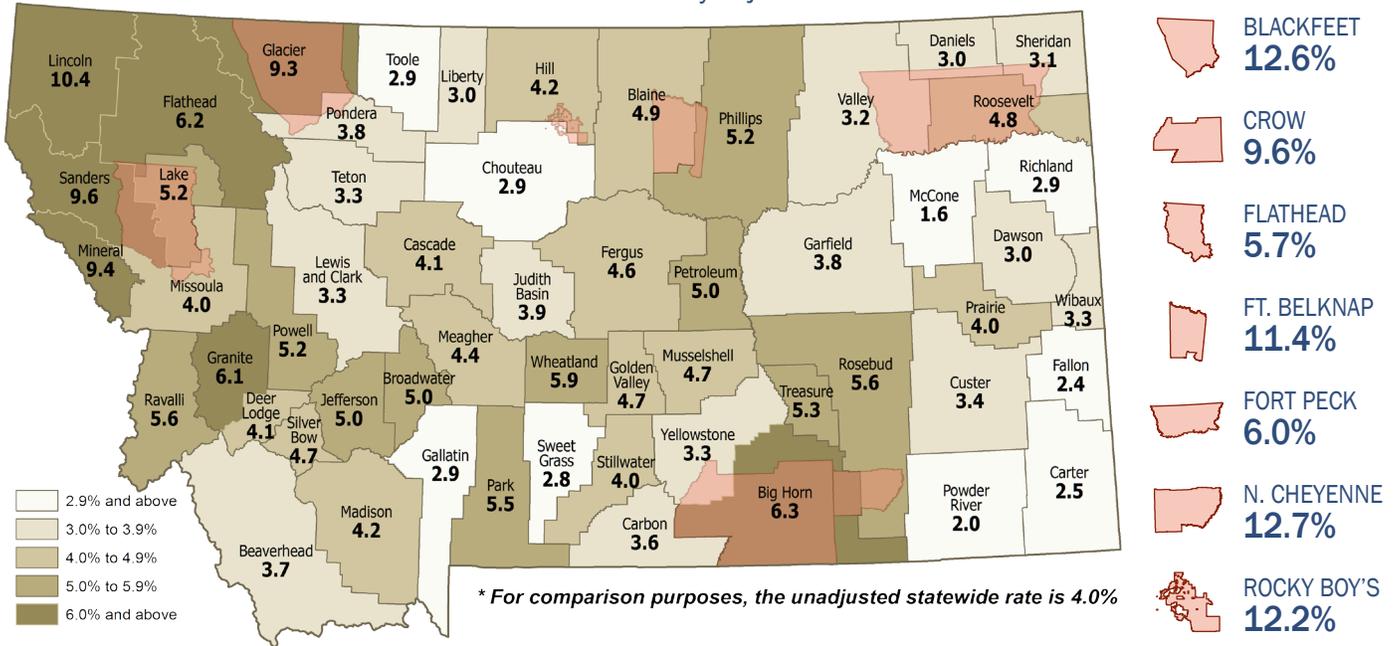
As Montana's labor market tightens, our wages will naturally grow. But the expected worker shortage will also make addressing our productivity concerns even more important, as improved productivity will also reduce the need for workers. With improved productivity, Montana's economy can continue to grow despite a constrained worker supply, and Montana workers and their families could achieve higher wages more comparable to national rates.

REFERENCES

- ¹ Current Employment Statistics, 2014, Montana Department of Labor & Industry.
- ² American Community Survey, 2014, U.S. Census Bureau
- ³ 2014 American Community Survey 1-Year estimates, U.S. Census Bureau
- ⁴ Labor productivity metric calculated by using 2014 state GDP from the Bureau of Economic Analysis, divided by the product of the total employment from the Bureau of Economic Analysis and the average work hours per week times 52 weeks from the 2014 American Community Survey 1-year estimates.
- ⁵ Occupational Employment Statistics, 2014, Montana Department of Labor & Industry.
- ⁶ 2014 National Broadband Map, National Telecommunications and Information Administration, U.S. Dept. of Commerce. www.broadbandmap.gov

COUNTY AND RESERVATION UNEMPLOYMENT RATES – DECEMBER 2015

Not Seasonally Adjusted



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