



# 2018 **MONTANA** ECONOMIC REPORT

AN ANALYSIS AND ASSESSMENT OF MONTANA'S ECONOMIC PERFORMANCE



**BUREAU OF BUSINESS AND  
ECONOMIC RESEARCH**  
UNIVERSITY OF MONTANA

# ABOUT THE MONTANA ECONOMIC REPORT

The Montana Economic Report is an annual assessment of economic activity in the state of Montana produced by the Bureau of Business and Economic Research at the University of Montana. Contributors to this report include presenters in the Economic Outlook Seminar. For more information about the bureau and to access this report online, visit [www.bber.umt.edu](http://www.bber.umt.edu).

# ABOUT THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau of Business and Economic Research is the main research unit of the College of Business at the University of Montana. Established in 1948, its mission is to inform Montanans about the economic climate in which they live and work. In addition to conducting its Economic Outlook Seminar across the state at the beginning of each year, BBER researchers are engaged in a wide range of applied research projects that deal with different aspects of the state economy, including survey research, economic analysis, health care research, forecasting, wood product research and energy research. Contact us at (406) 243-5113 or [bber@business.umt.edu](mailto:bber@business.umt.edu) if we can be of any help to you or your business.

## 2018 MONTANA ECONOMIC REPORT

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# THE YEAR IN REVIEW

## STATEWIDE ECONOMIC PERFORMANCE

### *Unraveling the Mystery*

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana

The economy contains a lot of moving parts and the economic performance of the state of Montana over the past year suggests that not all of those pieces are moving in sync.

2017 was a year of reasonably good wage growth and continued gains in employment for the state as a whole. Wages paid to payroll workers in fiscal year 2017, which ended on June 30, were more than \$800 million higher than in the previous fiscal year. On an inflation-corrected basis, wage growth has remained between 3.2 and 3.5 percent for each of the past three years. This is a very respectable performance.

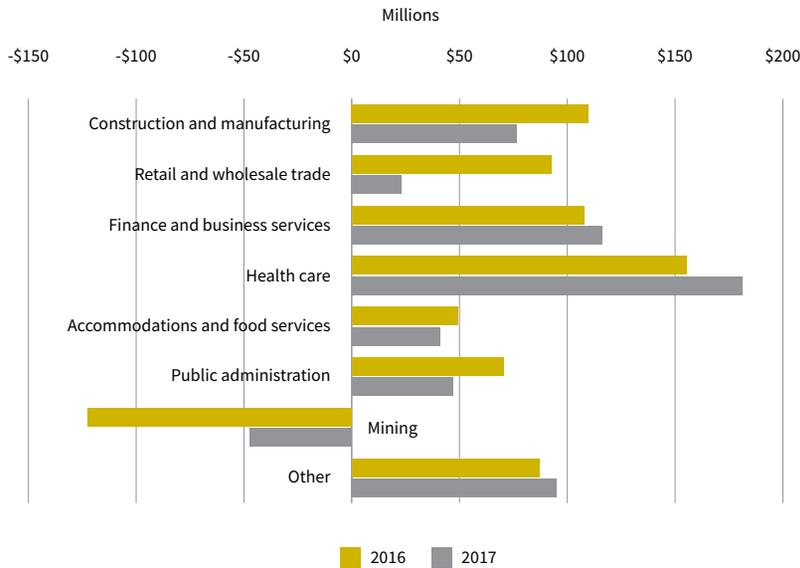
But wages only make up about two-thirds of total earnings and the other pieces that make up the total – most notably business owner income – have not fared as well. This business proprietor income – the production-related income of sole proprietorships, partnerships and tax-exempt cooperatives – sharply contracted by 6.6 percent in calendar year 2016 (data for 2017 are not yet available). With income from royalties, interest and rent also posting a disappointing 0.2 percent growth in 2016, the overall income performance of the state was less robust than wage growth.

The biggest contributor to wage growth in fiscal 2017 was health care, where payrolls expanded by \$180 million (Figure 1). Expansion has been fueled in part by the Medicaid expansion in Montana, which reduced the uninsured population statewide. Other highlights of 2017 growth include:

- Slightly faster growth in financial activities and professional business services, led by strong tech-related expansions in western Montana, as well as robust real estate performance.
- Slightly slower growth in construction and manufacturing, due to a wind down of industrial construction projects in Billings and the continued restraint in single family home building.
- A sharper growth slowdown in retail and wholesale trade as competition from online merchants takes its toll on brick and mortar retailers across the state.
- A modest improvement in mining industry wages with declines moderating in the face of very modest improvements in prospects for both coal and oil.
- Rail and transportation remain down significantly from three years ago, but have made a very modest recovery from a down year in 2016. And the expansion in government payrolls experienced in 2016 has moderated in 2017.

Largely missing from these statistics on performance is the state's agriculture industry. Montana farmers and ranchers, already suffering from the global grain glut and lower cattle prices, were hit with drought and in some cases wildfires in 2017. Their plight does not show up in analyses of wage growth because their payroll workforce is small,

Figure 1. Growth in real covered wages, fiscal year 2016 and 2017. Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.



but the losses suffered by owners and families promises to be substantial when the data arrive.

The labor market continued to perform well in 2017, with FY17 payroll jobs up by nearly 5,000 and continued low unemployment rates across the state. It was a good year for wage and salary workers, less so for business owners, especially farmers and ranchers.

## THE PERFORMANCE OF THE BBER FORECAST

### Improving Numbers

By Brandon Bridge  
Bureau of Business and Economic Research at the University of Montana

Since 2002, the Bureau of Business and Economic Research (BBER) forecast has approximated Montana’s economic growth within 1.7 percentage points on average. Taking

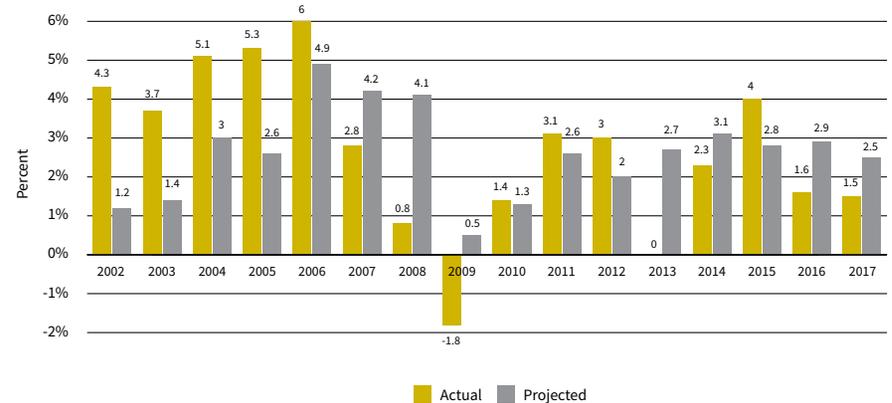
into account the prerecession boom years, the unanticipated Great Recession and the complications presented by continuous data revisions, this approximation performance has been relatively good. Moreover, since the end of the Great Recession in 2010, our projections have come within 1.1 percentage points on average.

Our forecast for 2017 was 2.5 percent growth in inflation-adjusted nonfarm earnings. Thus far into the year it seems that this forecast over-projected economic growth in the state, which has been most recently reported as 1.5 percent growth. Our forecasted figure of 2.5 percent was based in part on the reported growth in 2016, which has since been revised from 2.5 percent to 1.6 percent.

The latest economic reports have revised the data as far back as 2012. One primary item of interest in the revisions is that the actual economic growth in both 2014 and 2015 was 0.1 percentage points higher than reported last year. This revision inched us closer to our original forecast in 2014 and further from that of 2015. As previously stated, growth in 2016 has been revised to be 0.9 percentage points lower than last reported. This moved us even further from our 2016 forecast to become the second largest gap between projected and actual growth since 2009. This gap – 1.3 percentage points in 2016 – is still lower than average over the time span since 2002.

Bearing all of this in mind, the current estimated difference between projected and actual growth in 2017 of 1 percentage point is both lower than the average difference

Figure 1. Actual and project change in real nonfarm earnings, Montana, 2002-17. Source: Bureau of Business and Economic Research, U.S. Bureau of Economic Analysis.



over the entire time span since 2002 and lower than the average difference since the end of the Great Recession.

While these data are likely to undergo continued revisions as more accurate source data are reported, the performance of the BBER forecast continues to improve.

## MONTANA'S REGIONS AND CITIES

### Western Growth Dominates

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana

Even before a severe drought spread across all but the northwest corner of the state last summer, the economic fortunes of Montana's agricultural dominated communities were waning. Shifts in the marketplace sent ag prices and revenues falling. Meanwhile, the economies of Montana's traditionally faster growing urban areas in the west and southwest were catching fire. Key industries such as health care, tourism and tech-related businesses broke out in faster growth.

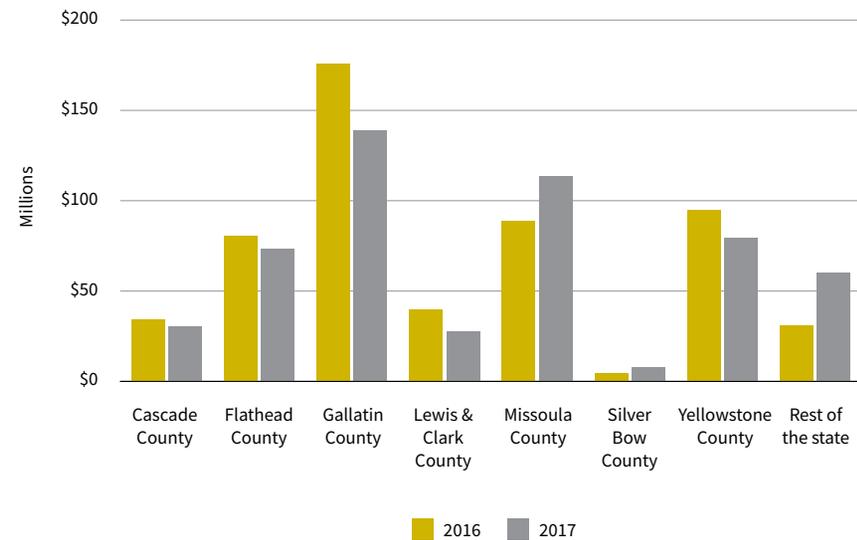
That pattern of growth solidified in 2017. Most urbanized parts of the state managed to at least tread water or register some growth last year. But there was no question that the pattern of growth continued to tilt westward with places like Missoula and Ravalli counties joining the likes of the already high-flying Flathead and Gallatin counties.

The time lag before complete information on the economic performance of the state's counties and regions becomes available makes this assessment more tentative than we would like. There is evidence from national data that suggests that the second half of 2017 – where we lack county-level data – was slightly stronger than the first. But the most recent data do tell an interesting and valuable story about how regions and cities are faring.

#### Growth in Payroll Employment and Wages

The growth in wages – the total paid to all payroll workers – was stronger statewide than the growth in income. Comparing total wages paid out during the fiscal year 2017, which ended on June 30, to those paid out in the preceding fiscal year shows Gallatin County once again at the top of the growth rankings, adding \$138 million to total payrolls

Figure 1. Growth in wages, FY16 and FY17, millions of 2009 dollars. Sources: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis.



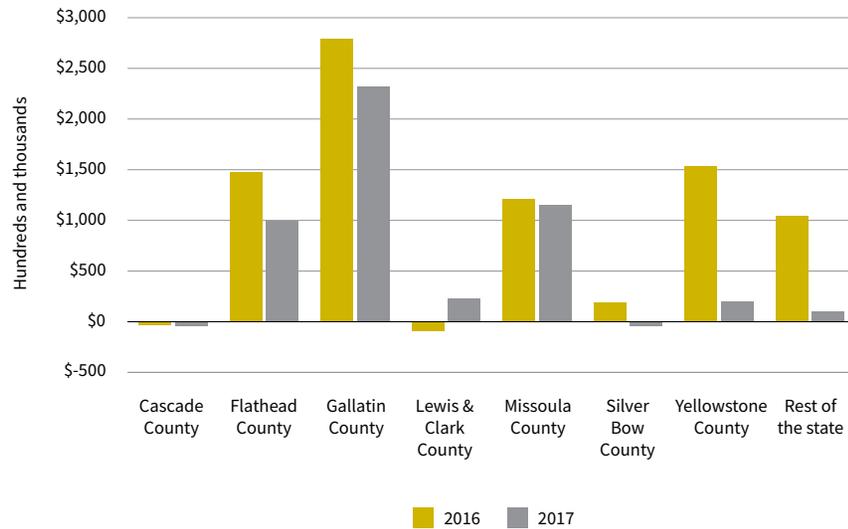
Wage growth also picked up in the balance of the state, for reasons almost as varied as the 49 counties that go into the total. Counties near the state's urban centers in the west, such as Ravalli, Lake and Madison counties, enjoyed strong in-migration and growth. The oil patch counties on the eastern border saw an end to the declines they have suffered since the oil price bust of 2014. Central and eastern counties saw declines.

Payroll job growth cooled slightly across the state in the fiscal year 2017 – using the data on payroll jobs from employer unemployment insurance filings as a basis for comparison. This covered employment was up by just under 5,000 jobs in 2017, compared to 8,100 jobs the previous fiscal year.

#### Cascade County (Great Falls)

The Great Falls economy has been on a slower growth trajectory for most of the post-recession period. Impressive gains in manufacturing and construction are the exception. Led by expansions at companies like Lowenbro and ADF, growth in these areas has been above the state average. The declining fortunes of agricultural producers and more

Figure 2. Growth in jobs, FY16 and FY17. Sources: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis.



restrained demographic trends have been a detriment to growth in high employing sectors like retail trade, professional business services and health care. The latter saw reasonably strong growth in 2017, but no more than the state average.

### Flathead County (Kalispell)

Strong growth in Kalispell has been propelled by major infrastructure improvements (especially the completion of the U.S. 93 bypass), some major expansions in health care and its rising prominence as a retail center. The area also benefited from the heavy traffic of visitors to Glacier National Park. Recently completed and continuing expansions in health care, such as the new pediatric facility, accounted for more than half of total growth in wages in fiscal year 2017.

Construction growth has also been healthy with wage growth at the state average. Columbia Falls has suffered more turbulence, but improvements in the wood products market have raised hopes of gaining back some of the losses.

### Gallatin County (Bozeman)

Gallatin continues to be the growth leader statewide by a large margin with steady, inflation-corrected wage growth in the neighborhood of 7.5 percent in recent years. The boom is perhaps best exemplified in construction industries, which are growing payrolls at almost twice that rate. For a smaller community its economic drivers are surprisingly diverse with the presence of Montana State University and Yellowstone National Park as a base, and with robust expansions in tech-related services and manufacturing adding fuel to the growth engine. Congestion and affordability have emerged as pressing issues for the community, but many other parts of the state would wish to have those problems.

### Lewis and Clark (Helena)

Slower growth in the Helena economy was a godsend when the rest of the state suffered through the Great Recession. But eight years later the continued lower trajectory of economic growth – wages grew by 1.8 percent in 2016 – has been less welcome. Visible success stories in manufacturing, including the Boeing facility, have more than offset downturns, such as the Drumlummon mine closure in the recent past. Most of the area’s more important industries – with the most important by far being state and federal government – saw growth in line with the overall average in 2017. The exception was construction, which grew more slowly.

### Missoula

The Missoula economy has quietly emerged from underperforming in the immediate aftermath of the Great Recession to growth in the past two years that is on par with Flathead County. It was the only urban area in the state to see growth accelerate in 2017. Much of that surge was due to strong construction activity, particularly commercial and multifamily residential structures. Professional business companies, such as technology consultants ATG, also played an important role in boosting wages faster than jobs. The falloff in University of Montana enrollment has been partially offset by increased research activity, although reductions appear to be coming. To the immediate south, Ravalli County has enjoyed faster growth, which led to a rebound in real estate and construction activity.

### Silver Bow (Butte)

An unheralded, but very real improvement in copper prices was felt in the Silver Bow economy in 2017. Home to the Montana Resources mine, the county is one of the few

in the state that saw an increase in mining earnings. Visitor related businesses in the area also enjoyed a successful year, as did Montana Tech. Some of those brighter stories were offset by weaker performances in construction, utilities and manufacturing employers. Health care was another sector that saw growth, but less than in other parts of the state. Butte has experienced consistent growth – except during the recession – for the better part of 15 years, although at a rate that is lower than the state average.

### Yellowstone (Billings)

As the distribution and warehousing hub for a four-state area, the state’s largest local economy has borne the brunt of the downturn in transportation and wholesale trade that has beset the national economy as a whole. Since 2014, it has faced the added challenge of the slump in the Bakken due to low oil prices. 2016 was a particularly challenging year with total wages inching up just 0.3 percent. But its economic vitality is better than the figure suggests, owing to the ups and downs of construction activity at the refineries that can distort the totals. Its health care employers have grown significantly, due in part to Medicaid expansion. Trend growth across the entire economy remains in line with the overall state average.

## STATE REVENUE REPORT

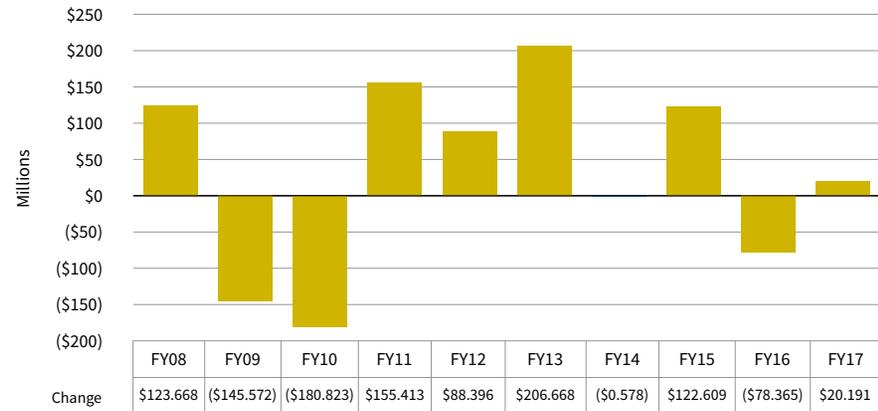
### A Year of Slow Growth

By Terry Johnson  
Bureau of Business and Economic Research at the University of Montana

Montana’s general fund revenue collections are a benchmark for total state government revenues. There are many other state receipts, such as federal and dedicated revenues, but the general fund is the account that provides a significant portion of revenue that supports many general government operations. General fund revenues are a mix of fees, taxes and investment earnings that are highly dependent on national and state economic conditions, as well as global market trends.

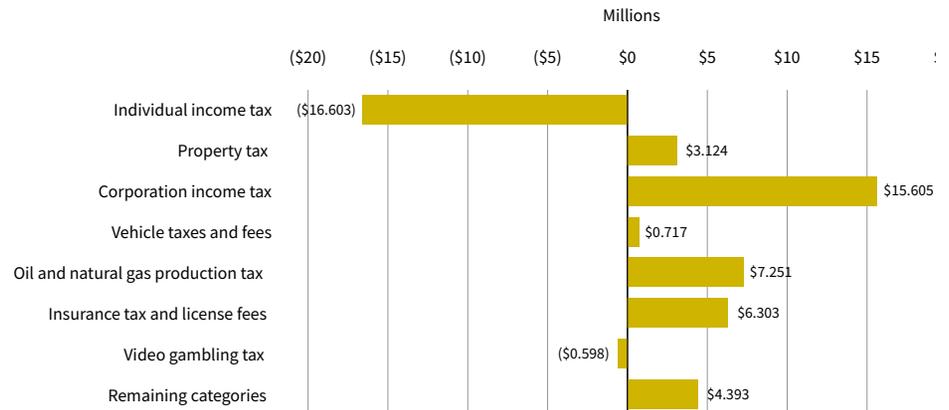
Figure 1 shows the year-over-year change in collections since FY08. From FY16 to FY17 general fund revenue increased only \$20 million or 1 percent. Slow or negative growth patterns usually occur during economic downturns like the Great Recession of 2008-09. Montana did not experience a recession in 2017.

Figure 1. State general fund revenue collections, year over year change. Source: Legislative Fiscal Division.



There are seven categories of revenue that contribute 86.6 percent of the receipts to the state general fund. The remaining categories make up the difference of 13.4 percent. Figure 2 shows the seven major categories, plus all the remaining sources lumped together.

Figure 2. State general fund revenue collections, change from FY16 to FY17, in millions. Source: Legislative Fiscal Division.

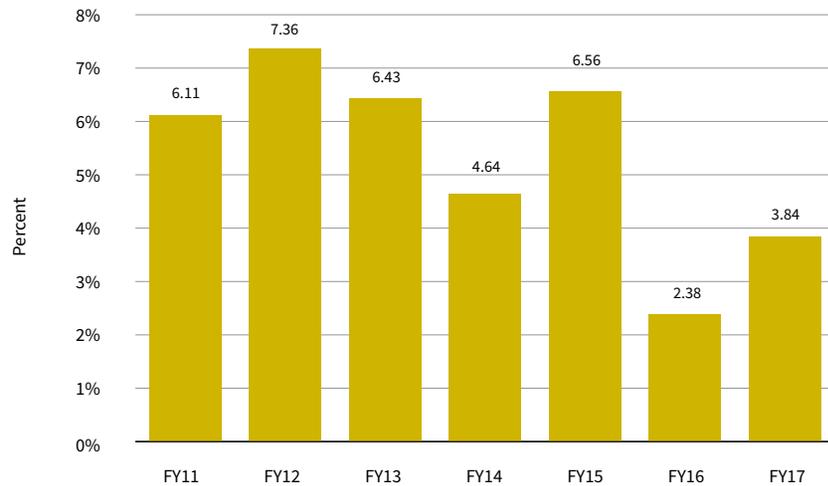


Individual income tax receipts were below the FY16 amounts by \$16.6 million or 1.4 percent. All other categories were above 2016 amounts except for video gambling taxes. These revenues were below 2016 by a minimal amount.

Individual income taxes were negatively impacted by slow wage growth influenced by low commodity prices. Figure 3 shows the year-over-year change in withholding tax receipts. Withholding collections represent a proxy for underlying wage growth in Montana. Withholding growth slowed in 2016 and 2017 compared to the higher rates observed from 2011 to 2015. Low commodity prices for oil, natural gas, coal and agricultural products impacted employment levels and thus corresponding wage growth (withholding receipts).

The 65th Legislature assumed an individual income tax growth rate of 4.5 percent from FY16 to FY17. The Legislature adjourned before the final collections were known for FY17. Since actual collections were below the FY16 amount by 1.4 percent, the individual income tax budget shortfall for FY17 was 5.9 percent (1.4 percent + 4.5 percent). This difference, combined with significant 2017 wildfire costs, explains why the executive and Legislature negotiated budgetary solutions to the general fund financial condition during the November special legislative session.

Figure 3. Withholding growth rates, year-over-year percent change. Source: Statewide Accounting, Budgeting & Human Resource System.



## MAJOR ECONOMIC EVENTS OF 2017

### Trump, Wildfires and Medicaid

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana

Montana experienced one of the most severe and prolonged fire seasons in recent history during the summer of 2017. Approximately 1.3 million acres burned in more than 2,100 fires across the state. The largest fire, the Lodgepole Complex fire, started on July 19 and consumed 270,000 acres of grazing land in eastern Montana, causing devastating losses for farmers and ranchers.

The estimated \$74.2 million in costs to state government overwhelmed the \$32.3 million set aside by the Legislature for the 2018-19 biennium.

The surprisingly poor performance of Montana general fund revenue collections, together with the substantially higher fire suppression costs incurred during the summer of 2017, necessitated a special session of the Legislature called by the governor in November 2017. Income tax revenues, which account for nearly half of total general fund revenues, were especially weak.

A severe drought that began in northeastern Montana spread across most of the state by late summer, drastically affecting crop yields and grazing land. Montana pulse crop production, which had been growing strongly, was particularly affected.

The Trump administration began the year with a series of cabinet appointments and administrative actions that promised a break with the land and environmental policies of the past. These included the approval of the Keystone XL pipeline project, a termination of the moratorium on coal leases and the suspension of the Clean Power Plan.

The reimbursement model for health care in general and Montana's Medicaid expansion in particular, remained uncertain as the U.S. Senate considered, but did not pass, a series of bills that would have substantially dismantled the Affordable Care Act's insurance expansion. Growth in insurance premiums continued for many Montana health plans, putting pressure on households and employers.

Lumber prices quietly rose nearly 50 percent over year-ago levels, as steady increases in construction spending created more pressure on supply. The first expansion in nearly

a decade, which would add about 70 jobs to the SmartLam mill in Columbia Falls, was announced in the fall. Other facilities report added shifts with the prospect of salvage logging in wildfire areas lending hope for better access to supply.

Friesen Foods, an Alberta-based food products company, filed a special use permit for a large slaughterhouse and food processing facility on the outskirts of Great Falls. If put into operation, it would employ up to 3,000 workers and represent the largest investment in value-added agriculture in state history.

Despite wildfire smoke, 2017 was another year of surging visitors to Montana parks. Glacier National Park saw more than a million visitors in the month of July, the first time any national park has hit that milestone.

Modest recovery in Bakken oil drilling activity in 2017 put an end to the steep economic declines suffered by Montana's oil patch counties. Richland, Dawson and Custer counties registered economic growth for the first time since the end of 2014.



# THE U.S. ECONOMIC OUTLOOK

## THE U.S. AND GLOBAL ECONOMIES

### *Is Stagnation Behind Us?*

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana

Economics has been living up to its old moniker as the “dismal science” lately. The slow growth in many of the world’s largest economies, including our own, has been dismal enough, but depictions of the slowdown by some renowned economists as a secular stagnation that is likely to persist for many years hasn’t been uplifting news either.

So the announcement that during the second half of 2017 economies around the world recorded their best growth performance since 2011 comes as welcome relief from a steady diet of disappointing economic news. This sets the stage for a pickup in growth in 2018 in the United States. Growth in the economies of our largest trading partners looks even more certain.

Here are the top 10 predictions for the economy in 2018, courtesy of our friends at IHS Markit, a national forecasting firm:

1. The U.S. economy will sustain above-trend growth. The U.S. economy began 2017 on a weak note, with a paltry 1.2 percent growth rate in the first quarter. Since then, growth

has averaged nearly 3 percent. With strong momentum at the end of the year, IHS Markit expects growth in calendar year 2018 to be 2.6 percent, above the 2.3 percent in 2017 and well above the 1.5 percent in 2016.

2. Europe’s expansion will slow a little, but remain solid.

3. Japan’s growth spurt will fade. The debt ridden government is unlikely to renew stimulus in fiscal year 2018.

4. China’s momentum will weaken. Structural problems in the world’s second largest economy – excess industrial capacity, debt overhang and a housing glut remain unsolved.

5. The performance of the emerging world will improve gradually. The external environment shows modest improvement, but governance and growing debt problems will restrain the improvement.

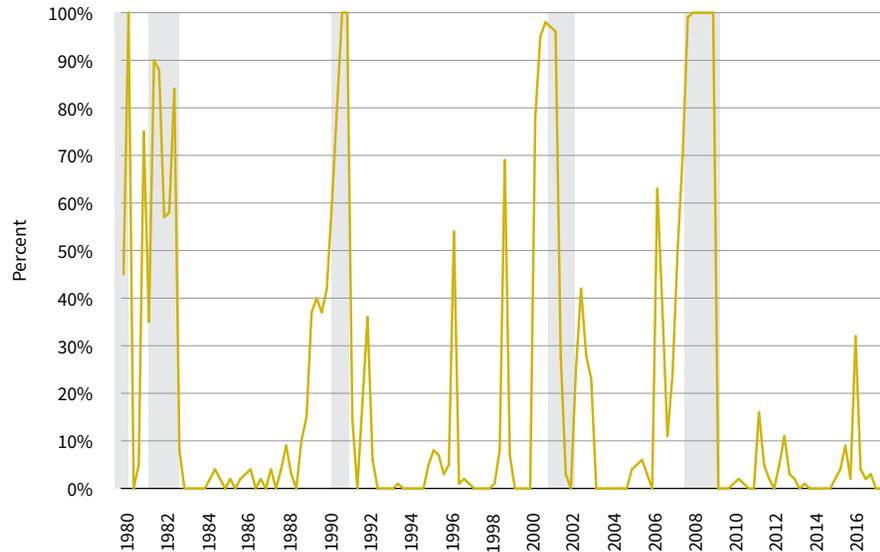
6. The rally in commodity prices is over. Prices going forward will show volatility, but the prospects for a sustained rally are dim.

7. Upward pressures on inflation will remain muted. While inflation is spiking in basket case economies like Venezuela and Zimbabwe, the developed world continues to struggle to surpass the 2 percent target of central banks.

Table 1. A quick look at the numbers (annual rates). Source: IHS Markit.

Annual rates	2017Q2	2017Q3	2017Q4	2018Q1	2018Q2	2016	2017	2018	2019	2020
Real GDP (% ch.)	3.1	3.3	2.7	2.2	2.5	1.5	2.3	2.6	2.3	1.9
Real consumer spending (% ch.)	3.3	2.3	2.8	2.7	2.3	2.7	2.7	2.5	2.3	2.1
Federal funds rate (%)	.95	1.15	1.21	1.44	1.72	.40	1.00	1.76	2.33	2.84
10-yr. T-note yield (%)	2.26	2.24	2.38	2.55	2.76	1.84	2.33	2.84	3.38	3.60
Brent crude price (\$/barrel)	50.94	52.17	60.08	57.67	54.67	44.24	54.47	55.71	57.58	67.03
CPI (year/year % ch.)	1.9	2.0	2.1	1.7	1.9	1.3	2.1	1.8	2.1	2.7
Housing starts (millions)	1.167	1.164	1.237	1.223	1.251	1.177	1.201	1.269	1.393	1.440
Unemployment rate (%)	4.4	4.3	4.1	4.0	4.0	4.9	4.4	3.9	3.8	4.0

Figure 1. Estimates of recession probability. Source: Wells Fargo.



8. The Federal Reserve will keep raising interest rates – some other central banks may follow. The Fed is on track for another three interest rate hikes in 2018, with some chance that they will do more if concerns over tight labor markets justify it.

9. The U.S. dollar will be pushed up a little more. After the roller coaster ride of 2017, the dollar is likely to get nudged higher in 2018 – although depending on political developments, volatility could also remain high.

10. With global growth momentum strengthening, the risks of a recession remain low. Since growth is now stronger and more synchronized across the world, derailing it would require a large shock.

# THE MONTANA ECONOMY IN DEPTH

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## BEHIND THE MALAISE IN MONTANA REVENUE COLLECTIONS

By Patrick M. Barkey  
Bureau of Business and Economic Research at the University of Montana

There has always been a lot of confusion in discussions about tax revenues in Helena. More accurately, there is confusion when these discussions are circulated outside the political community in our state capital – most of which is language. A spending “cut” in budget speak usually means a lower rate of growth than previously planned. Revenues which grow less than forecasted are referred to as “down.” Thus, the news about revenues, which ultimately required a special legislative session last November, requires some interpretation.

The discussion of declines and shortfalls in Montana tax revenues is more than semantics. General fund revenues are extraordinarily weak. On a fiscal year basis, general fund collections – encompassing the entire suite of state taxes and fees not earmarked for specific use – managed to grow by just \$20 million in 2017. On a base of \$2.1 billion, that’s roughly a tenth of a percentage point growth. The first four months of the new fiscal year have been a bit better with revenues up about 2.4 percent. That’s mostly

because the July-October period of 2016, which was used as a basis of comparison for this calculation, was extraordinarily weak. If we compare recent collections to two years ago, the growth is just 1 percent.

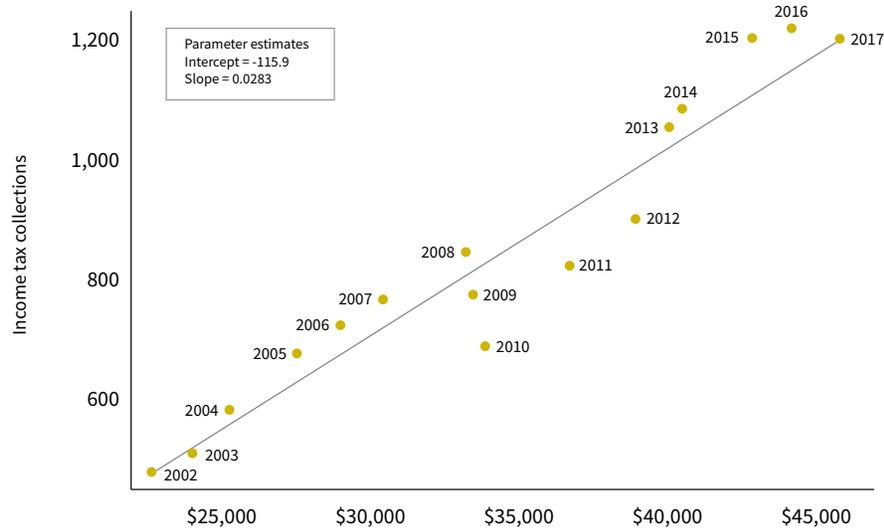
This stark reality has led to a new kind of confusion. Why aren’t revenues coming in as they should be? Behind this question is the premise that the economy is strong and thus the underperformance of revenue collections reveals a flaw in our tax system, not weakness in the base. As a matter of logic this is certainly possible, but calling a forecast right and the data wrong is not something that forecasters commonly do.

### **The Heart of the Matter: The Personal Income Tax**

There are 32 taxes, fees and other sources of revenue that account for about 98 percent of all Montana general fund revenue. Of those, the personal income tax accounts for more than half. In some years, big swings in more volatile taxes have made general fund revenues surge and wane. But the story behind this recent sluggish revenue performance has been stagnation in the receipts of Montana’s most important tax.

Are personal income collections tracking the economy? A glance at Figure 1, which displays income tax collections and personal income for each fiscal year 2002-17 along a regression line, reveals that tracking is less than perfect. While there is a close fit between income growth and tax collections, there have been some significant departures from what you might expect at different points in history.

Figure 1. Income tax receipts vs. personal income. Sources: U.S. Bureau of Economic Analysis and Montana Department of Revenue.



In the prerecession years of 2005-07, income tax receipts were stronger than income growth would seem to support. There was a run of errors in the opposite direction following the recession, when in 2010-12 revenues fell substantially short of what personal income growth would predict. And at the upper right edge of the graph, you can see that 2017 collections lay exactly on the line. By this measure 2017 revenues were exactly consistent with the historical relationship between taxes and the economy.

This is hardly the last word, of course. The considerable deviations from the tax/income trend relationship over recent years calls into question exactly why departures that cause revenue to over- or underperform take place.

With the increasing importance of the retired population, this undoubtedly reflects the significance of taxable retirement account drawdowns, which are not considered current personal income. Also, the 2017 data on personal income are preliminary estimates, subject to future revisions that could substantially change the story told above.

### The Changing Composition of Income Growth

This finding suggests that the root of the issue for personal income tax collections lies in the trends in the base. For this analysis it is preferable to deal with annual personal income data from the U.S. Bureau of Economic Analysis, rather than quarterly information, because it has already undergone some revision and is based on more complete source information. This necessitates focusing on calendar years, which do not exactly correspond to the state's fiscal year data.

Personal income, in the main, consists of three components: 1) earnings, which is income derived from employment; 2) unearned income, consisting of dividends, interest, rent and royalties; and 3) transfer payments, which are largely payments from government programs, such as social security, disability or unemployment insurance. There are other pieces as well, but these are less important. Of the three, the most important is earnings, which comprises about 60 percent of the total.

After surging in 2015, earnings growth in Montana fell to 1.2 percent in 2016 (Figure 2). There was also a steep decline in growth of unearned income in Montana in 2016 after

Figure 2. Percentage change in Montana personal income, 2014-16. Source: U.S. Bureau of Economic Analysis.

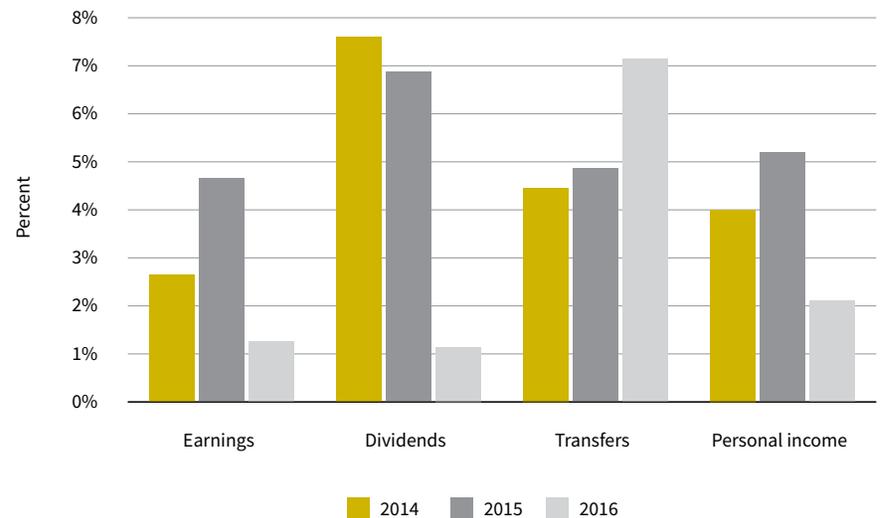
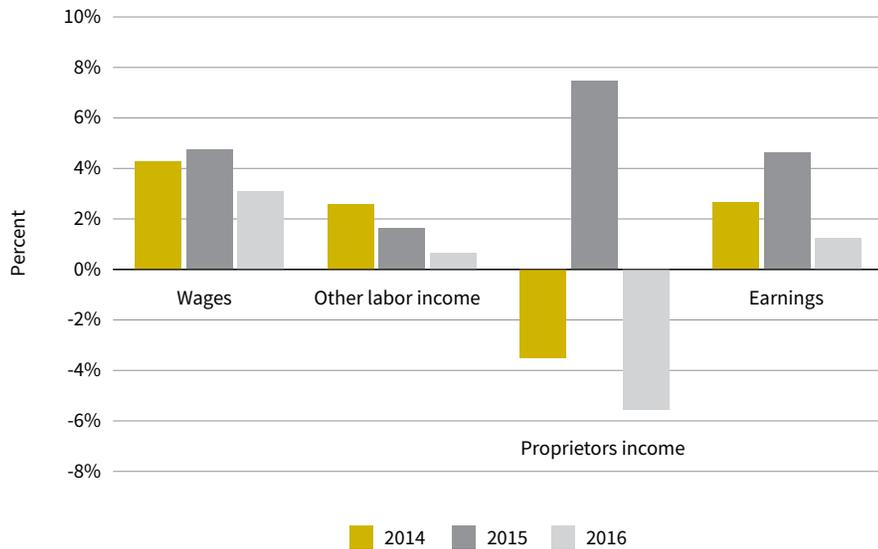


Figure 3. Percent change in Montana earnings, 2014-16. Source: U.S. Bureau of Economic Analysis.



two years of heady increases. This may reflect declines in energy-related royalty payments. Only the transfer payment category, which accounts for about 18 percent of personal income, saw a surge in growth. Many pieces of the latter category are not subject to tax. Overall, personal income growth was just 2.1 percent in 2016.

A closer look at the factors behind slow earnings growth reveals more that can explain the trends in income tax collections. Earnings can also be broken down into three components: 1) wages and salaries; 2) other labor income, consisting primarily of benefits and pension fund contributions made by employers; and 3) business proprietor income.

Of the three the largest, wages and salaries has been performing best (Figure 3), registering 3.1 percent in the calendar year 2016. This is roughly consistent with Montana income tax withholding, the sole bright spot in the income tax collection reports, which grew by 2.8 percent in the same year. The most volatile component of earnings has been business proprietor income, which turned from strong growth in 2015 to a decline of 5.6 percent in 2016.

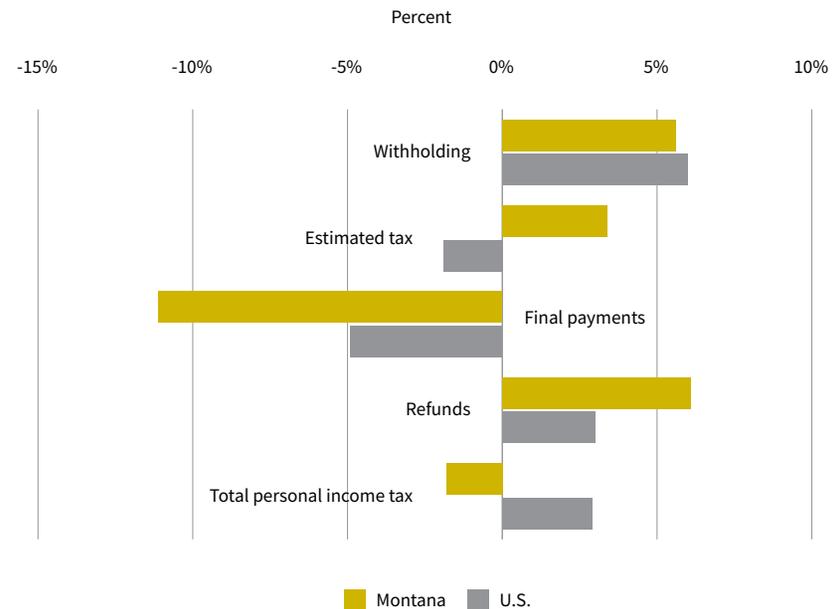
It has been the other components of income tax collections – estimated payments, refunds, final payments – which led to overall declining revenues in 2017. The big surprise for Montana generally comes in the spring, when most taxpayers settle up on their previous tax year liabilities. For both the U.S. as a whole, as well as in Montana, both final payments and refunds, which are negative revenue for the treasury, were bad in the spring of 2017 compared to the spring of the preceding year (Figure 4).

### Other Explanations for Revenue Stagnation

While there is a consistency between income growth and income tax receipts for fiscal year 2017, the far from perfect relationship between the two measures over the past 15 years leaves room for other explanations for stagnant receipts. These include:

- **The Trump effect.** Since business owners do have discretion in deciding what year to record their income, the expectation of lower tax rates tomorrow could make

Figure 4. Percent change in income tax collections, Jan.-May 2017 vs. Jan.-May 2016. Source: Rockefeller Institute.



wealthier individuals reduce their tax liabilities today. Past tax law changes at the federal level, such as changes in the tax treatment of capital gains, have produced dramatic changes around the tax change dates. The implication is that the recent weakness will be offset by unexpectedly higher revenues next year.

- **Shifts in retirement disbursements.** Not much is understood about the timing and behavior of disbursements from retirement accounts, which can cause changes in tax collections independent of other economic activity. Since there is withholding on many disbursements, this explanation is not entirely consistent with the observed behavior of tax receipts.
- **The new economy.** In an economy with increasing higher rates of mobility, telecommuting and online commerce, higher income households have more freedom to declare income in lower or zero income taxes. The implication is that Montana should be considering whether its tax system can adapt to this change to prevent the erosion of its base.

One last explanation is perhaps the most conventional one. That is to examine the income tax base.

The end of the oil boom in the Bakken affected state revenues in ways beyond the oil and gas severance tax. The loss of high wage jobs, reduced hours, reduced royalties and closures of business as the oil business contracted were all factors in Montana's revenue woes. The current situation for Montana's farmers and ranchers, beset by drought, wildfires and low prices, is another challenge that will certainly show up in the state's bottom line.

There is no escaping the fact that the revenue forecast adopted by the Legislature overshoot the actual trajectory of revenues. There is no shame in the error either – forecasting is a tough business and the events that produced the weaker revenue trajectory are still not fully understood. But the big picture descriptions of economic activity – personal income, earnings and wages – get us most of the way there.

# THE FUTURE OF HIGHER EDUCATION IN MONTANA

By Robert Nystuen  
Montana University System, Office of the Commissioner of Higher Education

Much has been written lately about the merits of higher education. Is a college degree really worth the investment of dollars and time? More specifically, do Montana's colleges and universities offer a compelling value proposition to sufficiently add to a person's financial future?

From both personal experience and data on our performance, I believe it is worth every dollar and every hour invested in furthering your education beyond a high school degree. But let's take a look at the data that support that conclusion.

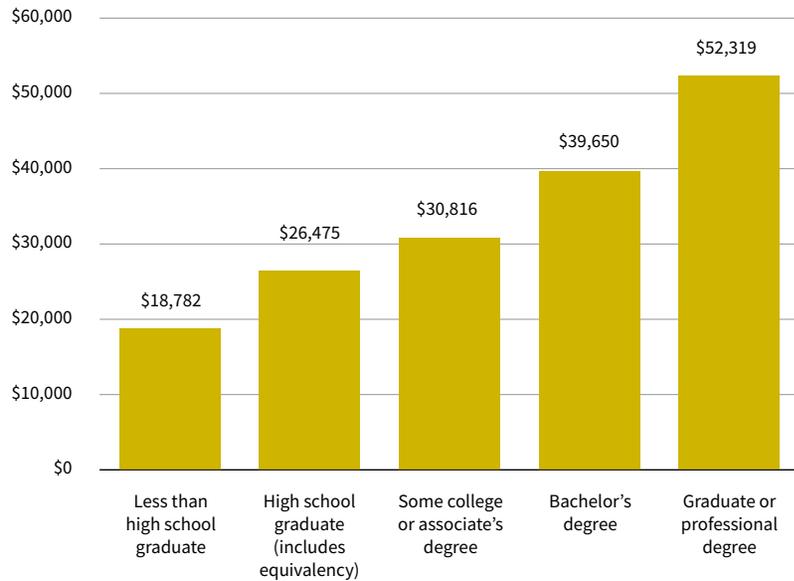
People with more education do better. Figure 1 shows median earnings for Montanans over age 25 by educational attainment. Earnings rise with education. One recent estimate found that, on average, people with college degrees earn more than \$1 million more than those with a high school degree over the course of their careers.

People with more education are also less likely to be unemployed. In 2016, the unemployment rate for Montanans with at least a bachelor's degree was less than 2 percent, but it was 4.4 percent for Montanans with only a high school diploma.

People with more education also tend to have healthier and more educated children. Women with a college education have healthier babies, as measured by birth weight and gestational age, and children with more educated parents tend to do better in school and earn more as adults. Thus, additional years of schooling generate a wide variety of benefits.

Attending more school is expensive though. Students must pay tuition and fees, forgo job opportunities and may need to pay for room and board – these costs add up. The average in-state tuition and fees for a full-time enrolled student at a flagship campus (University of Montana and Montana State University) is \$7,047 per year, approximately \$5,900 at a smaller four-year regional campus and nearly \$3,500 at a two-year college. Add in the additional costs of attending college – room and board, books, etc. – and it costs approximately \$20,000 per year for Montana residents to attend UM or MSU.

Figure 1. Median earnings for Montanans over age 25 by educational attainment. Source: American Community Survey 2016 (1-year).



This does not include financial aid and most students receive some amount of financial aid. Once financial aid is accounted, the annual cost for attending a Montana University System (MUS) four-year school is around \$15,000 per year. This number represents out-of-pocket costs and does not include opportunity costs (i.e., the earnings students forgo while they attend school), which are substantial.

The cost of attending an MUS school tends to be low relative to other states. For instance, the cost of attendance for in-state residents is \$27,500 at the University of Oregon, \$26,500 at the University of Washington and \$30,100 at the University of Colorado-Boulder. However, some of this cost advantage disappears once Montana’s lower household incomes are taken into account.

There is a distinct difference between incurring an expense versus making an investment. While both will diminish your initial cash balance, the investment is intended to provide a long-term financial return. Obtaining a college degree or certificate is an investment.

Over one’s lifetime, an individual with college credentials should expect to earn more, have brighter prospects for career growth, personal advancement and family prosperity.

Higher education also benefits our economy and society. Montanans contribute over \$186 million to higher education via state appropriations to the Montana University System. This amounts to roughly \$7,000 per resident student. This spending helps keep tuition and fees for Montanans low and affordable tuition helps ensure that Montana’s kids have access to the ladders of opportunity provided by higher education.

This spending also helps to ensure that Montana’s economy remains competitive. College-educated workers are an essential component of a modern economy. Economists have found that regions with more college-educated workers have performed better over the past several decades. They grow faster – experiencing faster population, wage and housing price growth.

Consistent with these findings, demand for college-educated workers is expected to remain strong. The Bureau of Labor Statistics forecasts that nationally 51 percent of job growth over the next decade will require some level of postsecondary education and 37 percent will require at least a bachelor’s degree.

In 2017, the Montana Department of Labor and Industry collaborated with the Office of the Commissioner of Higher Education and the Montana University System to study the labor market outcomes for Montana’s colleges (Meeting State Worker Demand, 2017). The study focused on these three questions:

1. Do colleges produce enough graduates in the right programs to fill the types of jobs required by Montana employers?
2. Do graduates find jobs in Montana, thus helping meet statewide worker demand?
3. Does the geographical distribution of the graduates match the distribution of worker demand in Montana?

MUS awards over 9,000 degrees and certificates to students annually. By matching education records with labor force information, we can determine that 80 percent of resident students find employment in Montana in the year following graduation. Thus, their earnings and spending help support the state’s economy. Indeed, the economic impact of all MUS activities – including research, visitor spending, as well as the earnings of graduates – indicate that nearly \$2 billion of after-tax income received by Montanans can be traced to higher education institutions.

## Understanding Enrollment Trends

When it comes to high school students attending college, the Montana University System has seen little growth largely due to demographics. Over the past five years, Montana has graduated 1,000 fewer high school students per year than it did in 2008. The demographics suggest we will maintain this level until 2022 when we will finally see more high school graduates.

Approximately 62 percent of high school seniors choose to attend college immediately following graduation and 49 percent of the graduates attend in-state schools. Given the positive outcomes from obtaining more schooling, this percentage should be higher.

A number of barriers prevent students from pursuing higher education, some are informational. Many parents and students overestimate the cost of college and are unaware of their eligibility for financial aid or do not understand how to apply. Other barriers are personal – some students are more reluctant to incur debt, some do not feel that they have adequate resources and others might lack confidence in their ability to succeed in college.

College-level math and English are also barriers that pose challenges for both traditional-age students (recent high school graduates) and nontraditional students (high school graduates leaving the workforce to attend college).

Could you solve this algebraic equation? Find the slope of the line  $5x-5y=7$ .

Years ago, I took high school math and struggled all four years – especially the last two. Then I headed to North Dakota State University to pursue a Bachelor of Science degree in agricultural economics. It required taking college algebra and calculus. College algebra was fairly easy, but calculus – over 40 years later – was difficult and I don't know how I passed the class.

Admittedly, as a community banker for 42 years, I use math all day long, but not algebra or calculus. While I understand the importance of rigor and critical thinking for college graduation, returning to high school or college math classes would require the humility of attending a remedial class.

That's precisely what is happening with prospective college students enrolling at campuses throughout the Montana University System (Table 1). College math is one of

the highest impediments to students enrolling and persisting through to college graduation, especially in non-STEM programs.

In aggregate, 28 percent of Montana's college-bound students start with a remedial class, rather than a college gateway writing class or math, which is required for their desired certificate or degree. As a result, our campuses need to dedicate considerable resources to remedial classes to prepare students for their college gateway courses.

Here's the next dilemma: Approximately one in 10 students who place in remedial algebra go on to earn a postsecondary degree or certificate. In other words, if you must enroll in college remedial math, you have a 10 percent chance of graduating. For too many students a remedial class is their first and last college experience.

## Solutions

How can we reverse the trajectory of remedial education requirements for our colleges and universities?

1. Teamwork between the K-12 schools, the Office of Public Instruction, the Office of Commissioner of Higher Education and the Montana Board of Regents. Montana's high schools are only required to provide two years of math to meet graduation requirements, although some high schools are requiring three years. In reality, if a high school student takes no additional math beyond their freshman and sophomore years, they will likely require college remedial math and their success in college is at risk.
2. Recognize that college algebra and calculus are not for everybody. If you are in a STEM field, you will need that knowledge. However, if you are enrolled in the humanities, certain health care fields or technical programs, there are different college math

Table 1. Remediation rates of Montana high school graduates attending MUS campuses. Source: Montana University System, Office of the Commissioner of Higher Education.

MUS institutions	Percentage of high school graduates taking remedial courses.
Four-year flagships	18%
Four-year regional	39%
Two-year institutions	42%

courses for proficiency in your field. Flathead Valley Community College offers a variety of math courses, including three sections of remedial math. One is entitled, “Math for the Liberal Arts.” It covers a variety of mathematics, including linear, quadratic and exponential functions, basic trigonometry, geometry, financial mathematics, probability, statistics and calculus.

3. The Montana Math Pathways + Math Corequisite Model has been launched across Montana University System campuses with the primary goal of teaching mathematics that will be of value to students in their lives and careers. Corequisite students are treated as college students on day one. Students complete gateway courses and enter programs of study in their first academic year. Corequisite students learn college-level content with additional instructional time and course hours.

These solutions are working: Montana State University-Billings has seen great success from Montana Corequisite with higher student test scores, higher completion rates and reduced attrition. Flathead Valley Community College in Kalispell has also embarked on a similar program.

When it comes to costs discouraging prospective students from enrolling in college, Jane Karas, president of Flathead Valley Community College said, “If our students can plan ahead, we can find a way to help them through loans, scholarships and payment plans. For our two-year students, one of the biggest challenges is they attend college part-time. Work and family responsibilities often compete with their focus on education. Students who receive support to attend college full-time are more likely to be successful.”

The campuses of the Montana University System solidly understand that student success and student attrition is at the heart of the matter.

I remember my mother telling me when I was an elementary school student that I’d better work hard and get good grades or I wouldn’t go to college and go on to find a good job. Fifty years later, I can assure you my investment was worth the time and financial resources I dedicated to obtaining a college degree. I have reaped an untold amount of personal and professional successes because of it, even though I can’t remember how to solve for the slope of the  $5x-5y=7$  algebraic equation.

# AFFORDABLE HOUSING IN MONTANA

## *Are We Pricing Out Our Residents?*

By Bryce Ward

Bureau of Business and Economic Research at the University of Montana

Housing discussions in Montana frequently start with the premise that housing is unaffordable. A recent Gallup study found evidence consistent with this premise. Forty percent of Montanans were dissatisfied with the availability of good, affordable housing. This tied Montana with Maryland and Oregon for eighth worst in the country. But how unaffordable is housing in Montana?

### **Does Montana have a housing affordability problem?**

The brief answer is yes – sort of, but it’s complicated. People who claim that housing is unaffordable may be making one of three comparisons. First, they might be comparing across place – asking, “Is housing here more or less expensive than housing elsewhere?” Second, they may be comparing the cost of housing to income – asking, “Do people spend too much of their income on housing here?” Third, they might be comparing the price of housing to the cost of building it – asking, “How much higher is the price of a house relative to the cost (e.g., the labor and material costs) of replacing it?”

Each of these comparisons reveals something different about the health of the local economy. Comparing prices across place helps illuminate attractiveness and identifies the set of people who might be able to save money by living in Montana. Comparing prices to income shows the extent to which housing costs are a burden. It helps to identify when housing costs may squeeze out spending on other important items (e.g., food, health care or education). Comparing prices to income helps clarify Montana’s attractiveness relative to competing regions. Comparing prices to the cost of building highlights how well the local housing market is operating and helps to identify places that have a greater difficulty building new housing.

### **Is the cost of housing in Montana high or low relative to elsewhere?**

Relative to other places rent in Montana is cheap, but home prices are not (Table 1). In markets across Montana, median gross rent tends to be 15-25 percent below the U.S. median and 30-35 percent below the Western states median. Montana’s median home

Table 1. Housing costs in Montana relative to the U.S. and other Western states. Source: BBER analysis of 2016 American Community Survey (1-year).

	Median home value	% of U.S.	% of West	Median gross rent	% of U.S.	% of West
Billings	\$220,900	108%	66%	\$829	85%	69%
Bozeman	\$347,900	170%	103%	\$925	94%	77%
Great Falls	\$169,500	83%	50%	\$710	72%	59%
Helena	\$227,900	111%	68%	\$787	80%	66%
Kalispell	\$247,800	121%	73%	\$831	85%	69%
Missoula	\$270,300	132%	80%	\$818	83%	68%
Montana	\$217,200	106%	64%	\$741	76%	62%
U.S.	\$205,000	-	-	\$981	-	-
West	\$337,200	-	-	\$1,200	-	-

values though tend to exceed the U.S. median; however, Montana’s median home values fall below the Western states median, except for Bozeman.

**Do Montanans spend too much of their income on housing?**

Sort of. While no absolute standard for what constitutes too much income exists, a 30 percent threshold is common. That is, when housing consumes more than 30 percent of income, it is unaffordable. By this metric, housing is unaffordable for a large proportion of renters. Forty-six percent of renters nationally are rent burdened, spending more than 30 percent of income on rent. In the West, this percentage rises to 49 percent, but it is only 39 percent in Montana. While the share of rent burdened households varies across Montana, generally the share of rent burdened households is higher than ideal, but lower than the U.S. and the West (Table 2).

For homeowners, the story is more complicated. Thirty percent of Montana homeowners with a mortgage spend more than 30 percent of their income on selected monthly ownership costs, which include mortgage payments, real estate taxes, insurance and utilities. This is slightly higher than the U.S. share (28 percent), but below the Western share (33 percent). Again, it varies across markets (Table 2). This metric includes people who purchased homes many years ago. As such, it fails to capture the burden faced by recent buyers or those looking to buy. The ratio of home values to household incomes provides an alternative affordability metric.

Table 2. Housing costs relative to income. Source: BBER analysis of 2016 American Community Survey (1-year).

	Share renters >30%	Share selected monthly ownership costs (w/ mortgage) >30%	Median home value/median household income
Billings	37%	31%	3.81
Bozeman	45%	29%	5.68
Great Falls	44%	22%	3.76
Helena	32%	23%	3.65
Kalispell	52%	31%	4.94
Missoula	47%	32%	5.81
Montana	39%	30%	4.34
U.S.	46%	28%	3.56
West	49%	33%	5.34

Nationally, the median home is worth 3.56 times the median household’s income. In Montana though, this ratio is 4.32 and in Bozeman and Missoula it is 5.68 and 5.81, respectively (Table 2). Bozeman and Missoula fall in the 95th percentile among all metros. Their ratios are higher than those found in Denver (4.85), Seattle (4.98), Portland (5.02) and Miami (5.07).

**Is the cost of housing in Montana high relative to the cost of building houses?**

While precisely measuring construction costs across place poses challenges, various attempts to quantify construction costs across the U.S. do not suggest that Montana has unusually high construction costs. For instance, a recent analysis by Issi Romem of BuildZoom found that land values per home in and around Billings and Missoula were high. Average land values per home exceed \$300,000 in places around Condon and Red Lodge. This is on par with the land values found in some parts of major metro areas like New York, LA and Chicago. Land values are not only high in high amenity vacation areas, some parts of Missoula and Billings proper have average land values per home that exceed \$290,000. This suggests that the value of the land sitting beneath many Montana homes is relatively high. It also suggests that land value and not structure value, drives high housing prices in Montana.

### Is Montana less affordable than it used to be?

Montana is much less affordable than it was 25 years ago. Montana’s home prices more than doubled (adjusting for inflation) since the early 1990s. Home price appreciation in Montana ranks fourth among all states, trailing behind Colorado, Oregon and Wyoming.

Since 1990, Montana’s median gross rent increased by 26 percent (adjusted for inflation). This was faster than the U.S. (16 percent) and ranked Montana 11th fastest among all states. However, rent in Montana grew by less than many other Western states like Colorado (48 percent), Utah (37 percent), Washington (35 percent), Wyoming (33 percent) and Oregon (32 percent).

Housing costs have increased more than income. Montana’s median household income only increased by 21 percent (adjusted for inflation) since 1990. As a result, the share of income devoted to housing in Montana has gone up (Figure 1). In 1990, Montana was one of the most affordable states. Across the income distribution, Montanans spent less of their income on housing than the U.S. average. However, relative to 1990, low-income

Figure 1. Change in share of income spent on housing, 1990-2015. Source: BBER analysis of IPUMS-USA 1990 Census & 2015 American Community Survey (5-year).

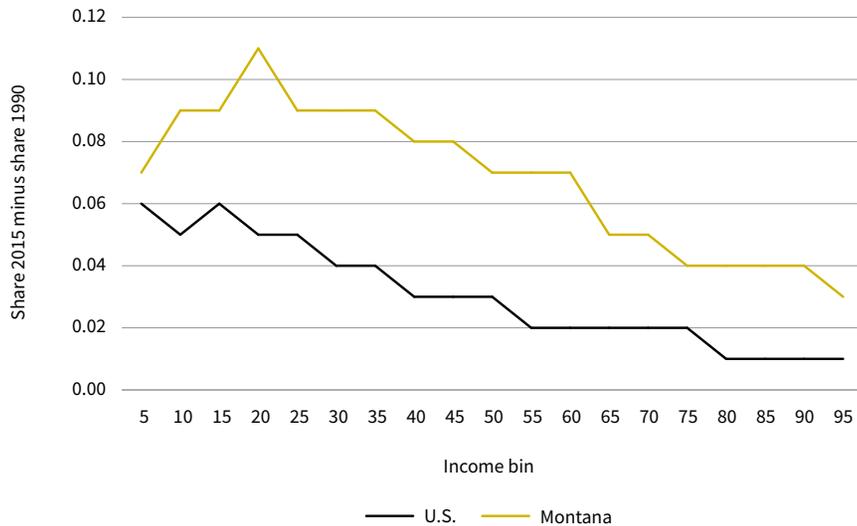
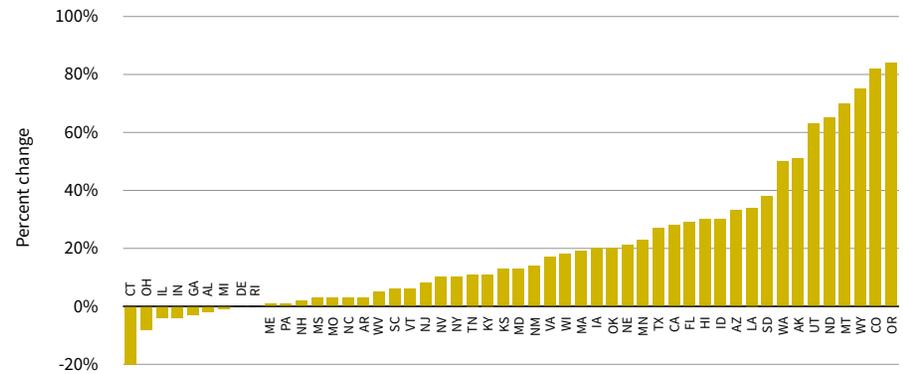


Figure 2. Cumulative percent change in inflation-adjusted house prices, 1991-2016. Source: BBER analysis of OFHEO House Price Index.



Montanans now devote roughly 10 percentage points more of their income to housing and high income Montanans devote roughly 4 percentage points more. These increases have largely eliminated Montana’s affordability advantage relative to the U.S. and reduced its affordability relative to other parts of the West (Figure 2).

In sum, assessing housing affordability in Montana is complicated. In many Montana markets, homebuyers face high prices. Prices are high relative to other parts of the country. They are high relative to the incomes typically earned by Montanans. They are also high relative to the cost of building a house.

Prices are also much higher than they used to be. Montana renters though, fare better. Rent in Montana markets tends to be lower than in other parts of the county. Montana renters are less likely than the average American renter to be rent burdened (i.e., spend more than 30 percent of their income on rent). Of course, while these patterns are typical across Montana, they are not ubiquitous. Conditions vary widely across Montana’s various housing markets.

If Montanans are worried about the affordability of housing, standard economic logic suggests that to increase affordability Montana needs to slow housing price growth, while also boosting income growth. This is difficult because slowing housing price growth entails making Montana less attractive.

Montana could also attempt to arrest housing price growth by building more. There may be ways to increase supply response by removing land use regulations or by increasing the capacity and efficiency of the development sector, including developers, builders and lenders. However, some impediments to development are impossible to solve. Mountains and water limit the supply of developable land in many parts of Montana.

Since 2000, Missoula, Helena and Billings have all added homes at the average rate given their price growth. Kalispell and Bozeman built substantially more than expected given price growth. In fact, between 2000 and 2015, Bozeman's housing stock grew at the 10th fastest rate among metro- and micro-areas. Yet, in spite of this growth, housing prices in Bozeman still grew at one of the fastest rates in the country. This fact suggests that it may be difficult to increase supply by enough to substantially lower housing prices.

All together these facts suggest that making housing more affordable in Montana may be difficult. Some degree of unaffordability may be hard to avoid. Montanans, or at least Montanans in certain places, may need to learn to adapt to relatively unaffordable housing.

## INVESTMENTS IN MONTANA'S YOUNG CHILDREN YIELD HIGH RETURNS

By Rob Grunewald  
Federal Reserve Bank of Minneapolis

Montana's workforce of the future and the present can benefit from investments in young children. First, health, nutrition and early learning programs for young children and their families can boost future labor force productivity and reduce costs to government. Second, a high-quality child care system allows parents to enter the workforce and be more productive in their jobs. Both of these benefits have led business leaders in several parts of the country to get involved by advocating for resources and supporting child care providers.

### The Benefits of Getting Children off to a Great Start

Investments in health, preschool and quality child care can help children start strong and arrive at kindergarten prepared to succeed. The first few years of life set the foundation for developing the attributes and skills needed to succeed in school and work, including math and language proficiency, critical thinking, collaboration, self-motivation and persistence. As stated by James Heckman, Nobel laureate economist at the University of Chicago, skills learned later in life build on those learned as a young child; thus, "skills beget skills."

Neuroscience and developmental psychology research describes the type of early experiences that help children thrive, including stable and nurturing relationships with caregivers, language-rich environments and encouragement to explore through movement and senses. With supportive early experiences, children are more likely to arrive at kindergarten ready to succeed in school.

Research also describes the experiences that hinder healthy development: poverty; exposure to violence, abuse or neglect; and an incarcerated or mentally ill parent. Adverse experiences or "toxic stress" can lead to a brain wired for negligence or threat, which can impair learning, memory or the ability to self-regulate.

The impact of early adversity is observed in children well before they arrive at kindergarten. One research study documented that by the age of 3 years, children in high-income families have twice the vocabulary of children in low-income families.

Prominent studies of early childhood education, including those of the Perry Preschool Project in Michigan (ages 3–4 years), the Chicago Child-Parent Centers program (ages 3–4 years), the Carolina Abecedarian Project in North Carolina (ages 3 months through 4 years) and the Prenatal/Early Infancy Project in Elmira, N.Y. (home visits by a registered nurse; prenatal to age 2 years) demonstrate that children from disadvantaged environments can make gains from participating in a high-quality early learning program and that the benefits extend well into adulthood.

Benefits include lower social costs (e.g., lower costs due to reductions in crime) and higher school achievement, educational attainment and earnings. Analysis also shows health improvements, such as reductions in smoking and lower risk for heart disease and diabetes. Benefit-cost ratios from these projects range from \$7 to as high as \$16 returned for every \$1 invested. In addition, across the four studies, public benefits from

reduced societal costs and increased tax revenue were larger than private benefits to children and their families.

Not only can investments in young children reduce societal costs and increase tax revenue, they can boost future labor force productivity – a key ingredient of economic growth. With demographic trends showing almost no growth in Montana’s population age 20 to 64 over the next 20 years, the effectiveness of early learning, as well as primary, secondary and postsecondary education, will be important to help meet demands for labor.

### **Child Care as Workforce Infrastructure**

High-quality child care not only helps children develop and prepare for school, the child care sector serves as key workforce infrastructure. In Montana, just over 60 percent of children under age 6 have all of their parents in the workforce. This means the parents of almost 45,000 young children in Montana are likely arranging for care at a child care program or with a relative, friend or neighbor.

The consistency and quality of child care arrangements can have an impact not only on whether parents enter the workforce, but also on how productive they are at their jobs. For example, about 8 percent of respondents with a child under 5 in the 2016 National Survey of Children’s Health noted that during the past 12 months, the respondent or someone in their family had to quit, not take or greatly change a job because of problems with child care. Research also shows that parent absenteeism and productivity reductions due to child care breakdowns cost U.S. businesses more than \$3 billion annually.

Montana’s STARS to Quality is an example of an initiative to help increase the number of high-quality child care providers and give parents tools to locate providers based on their quality. Providers are rated from one to five stars based on criteria, including staff education and qualifications, curriculum, caregiver-to-child ratios and community partnerships. The rating system provides accessible information to parents about provider quality and lays out a pathway for providers to improve quality. In this voluntary program, 46 percent of Montana child care centers and 20 percent of home-based family child care providers participate. The number of new providers that can join is limited due to funding constraints.

Business leaders benefit when their parent employees have access to consistent and high-quality child care providers, which is one reason why some business leaders around the country are volunteering their expertise and advocacy voice to improve child care

quality and access. For example, in Minnesota a nonprofit founded by business leaders has helped the state’s quality rating and improvement system by providing in-kind marketing and funding an evaluation. Business leaders have also mentored child care operators who often don’t have formal business training. Finally, some businesses also support their own parent employees by providing flexible work schedules and resources to help them access child care.

### **Early Childhood Development in Montana**

To help provide context about Montana’s child population, health and education statistics, as well as feature programs available for children and families, the Helena Branch of the Federal Reserve Bank of Minneapolis published Early Childhood Development in Montana. Here are a few highlights:

Of Montana’s more than 73,000 children under age 6, 22 percent live below the poverty line (\$24,600 for a family of four), while 46 percent live below 185 percent of poverty (\$45,510 for a family of four). About 79 percent of young children are white, 11 percent are Native American.

In 2015, 7.1 percent of newborns were low weight at birth, which is associated with increased risk for complications during infancy and later health problems. This is lower than the 8.1 percent U.S. rate, but is up from 6.2 percent in 1990. One major risk for adverse birth outcomes is maternal drug use, which has been on the rise in recent years. The Montana teen birth rate dropped by 50 percent since 1990, but in 2015 was somewhat higher than the national teen birth rate. While Montana is in the process of developing a kindergarten entry assessment to help measure school readiness, based on 4th grade reading and math test scores, Montana’s proficiency rates were slightly lower than those of the nation.

Montana has a number of early health, nutrition and education resources in the state, such as home visiting programs to support parenting, federal nutrition and health programs, and child care subsidies. Much of the funding is provided from federal sources and is administered through state departments. Last legislative session, the state passed \$3 million to fund preschool – Montana’s first allocation of general revenue for preschool. However, despite these resources, thousands of Montana’s vulnerable children and families still do not receive services. Reaching these children is where Montana’s government and economy have the most to gain.



# ASSESSING MONTANA'S KEY INDUSTRIES

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## FARMING AND RANCHING

### *Low Prices Hit Home*

By George Haynes and Kate Fuller  
Montana State University Department of Agricultural Economics and Economics

Montana farmers and ranchers experienced a challenging year in 2017. Drought conditions caused substantially lower crop production, although lower production was met with somewhat stronger grain and cattle prices.

Wheat and barley production declined 40 percent and 38 percent respectively, while pulse (lentils, dry peas and beans) production declined 38 percent from last year (Figure 1).

Remarkably, the drought lowered average yields on grain (spring wheat, winter wheat, durum and barley) by 33 percent and pulse yields by 44 percent from the previous year. A modest upward price movement for wheat, pulses and livestock (primarily calves) helped mitigate production declines.

Price forecasts for the next five years suggest steady to slightly higher prices in the wheat, barley and pulse markets, and slightly lower prices in the cattle market.

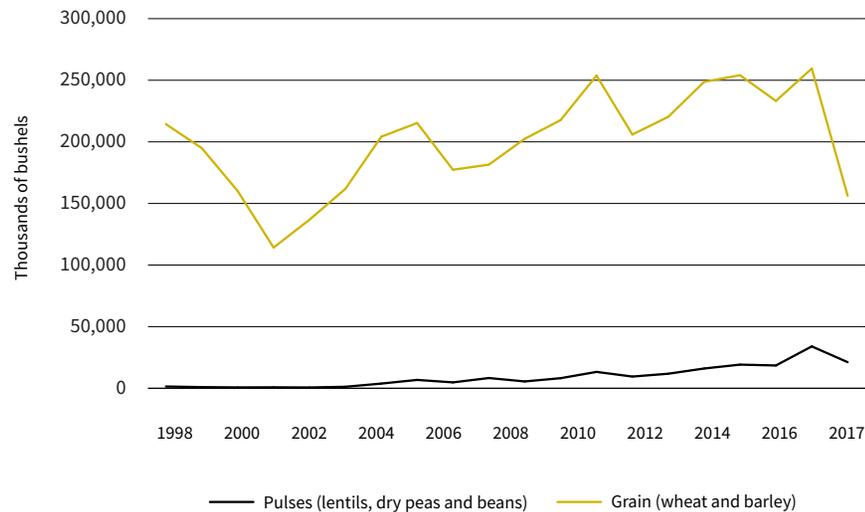
### Crop Production and Prices

Unfavorable summer weather and lower planted acreage resulted in lower production for many wheat, barley and hay producers throughout most of Montana. Total production of winter wheat decreased 37 percent, primarily because 22 percent or 500,000 fewer acres were planted in 2017 and average yields were 14 percent lower. Even though spring wheat planted acreage was slightly higher than 2016, total production of spring wheat decreased 37 percent as average yields were 58 percent lower because of severe drought conditions in northeastern Montana. Total production of barley decreased 38 percent because of 22 percent fewer acres planted and 15 percent lower average yields. Finally, alfalfa and grass hay production was down 13 percent, largely because of drought conditions.

Even though wheat, barley and hay have been the most stable crops in Montana for several decades, the number of acres planted to lentils and dry peas continues to grow. Pulse crop planted acreage eclipsed 1.5 million acres in 2017, although drought conditions reduced harvested acres by 7.5 percent (or 100,000 acres) and reduced total production by 38 percent from 2016.

Lentil acreage increased from 520,000 acres to 730,000 acres (a 40 percent increase) with very dry conditions lowering total production by 38 percent (and average yields declined 52 percent) from last year. With dry edible pea acreage decreasing from 610,000 acres to 520,000 acres (a 15 percent decrease) complemented by severe drought condi-

Figure 1. Grain (wheat and barley) and pulse (lentils, dry peas and beans) production in Montana.  
Source: USDA, National Agricultural Statistics Service.



tions, total production decreased 54 percent (and average yields declined 46 percent) from last year. Dry edible beans (primarily garbanzo beans) acreage increased 160 percent from 2016, but total production only increased 70 percent (and average yield declined 35 percent). In the past five years, the replacement of fallow with pulse crops in the crop rotation has proven profitable; however, drought conditions reversed this trend in 2017.

The substantial decline in agricultural commodity prices beginning in January 2015 ended in late 2016. The modest increase in wheat, dry peas, dry beans and hay prices helped mitigate production declines throughout Montana. Winter and spring wheat prices increased over 12 percent; although, barley prices declined by more than 20 percent.

Dry pea prices increased over 5 percent and dry bean prices were less than 1 percent higher; although, these modest price increases were offset by lentil prices that declined nearly 10 percent. Hay prices remained strong increasing over 7 percent from the previous year.

## Livestock (Cattle) Production

U.S. beef production increased 5 percent in 2017. U.S. beef production forecasts suggest that production will increase over 3 percent in 2018. U.S. beef exports increased 11 percent from 2016 and are expected to increase another 3 percent in 2018. U.S. beef imports decreased 2 percent from 2016 and are expected to increase slightly in 2018. Montana ranchers are largely cow-calf producers, who market about 1.5 million calves each year. Calf prices increased over 15 percent from the previous year; although, pasture conditions were poor, which meant that cattle were being culled or shipped to market earlier due to dry conditions.

## Farm Financial Conditions

U.S. net farm income declined over 50 percent from 2013 through 2016; although, the average U.S. farm balance sheet has remained healthy with a debt to equity ratio below 15 percent. Perhaps the most important challenge facing producers is liquidity, where the average U.S. farm current ratio (current assets/current liabilities) has declined from 2.87 in 2012 to 1.55 this year. These ratios suggest that U.S. agriculture is facing short-term liquidity challenges, but not long-term solvency challenges.

# FOREST PRODUCTS

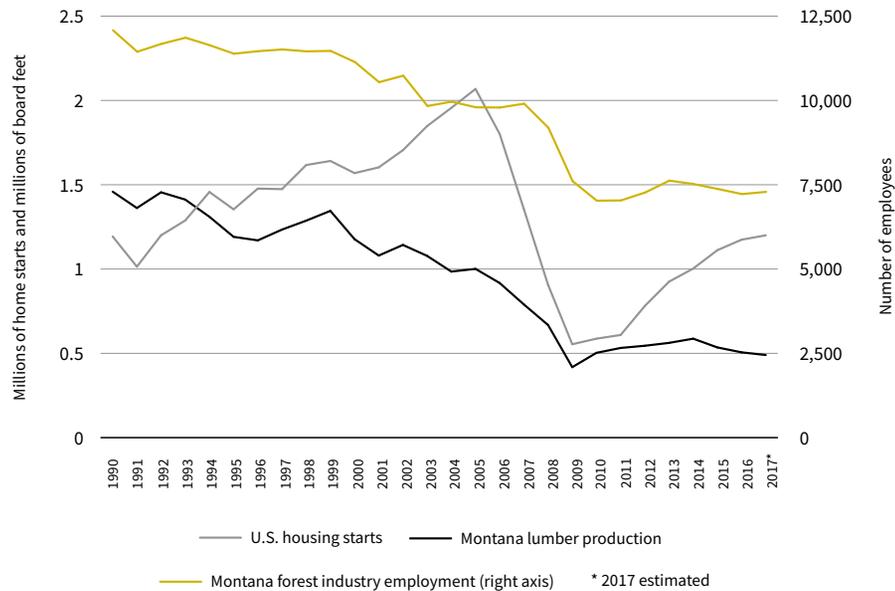
## Wildfires Present Opportunities

By Todd A. Morgan, Kate C. Marcille and Steven W. Hayes  
Bureau of Business and Economic Research at the University of Montana

Montana's forest products industry was not immediately hit by the 2017 wildfire season. While forests were temporarily closed to timber harvesting in many areas, some loggers were able to operate their equipment in firefighting efforts and production at Montana mills this summer was on par with 2016. Continuing efforts to salvage timber and rehabilitate burned sites could help keep Montana loggers, other forestry workers and mills busy for several seasons.

When surveyed in December 2016, Montana's wood products manufacturers were optimistic about the year ahead – predicting rising prices, production, sales and employment. However, several of these economic indicators were down through the first three quarters of 2017. Lumber production was down almost 5 percent from 2016

Figure 1. U.S. housing starts, Montana lumber production and Montana forest industry employment, 1990-2016. Sources: U.S. Census Bureau; Western Wood Products Association; U.S. Department of Commerce, Bureau of Economic Analysis; Bureau of Business and Economic Research.



levels, mill employment was down by 4 percent (about 68 jobs) and mill worker wages were down about half of a percent. Sales from Montana producers were more in line with expectations to increase. They were estimated to be up about 7 percent from last year because lumber and panel prices were about 15 percent higher during 2017.

New U.S. home starts continued to increase during 2017, up about 2 percent to around 1.2 million (Figure 1). Returning to the long-term annual average of 1.4 to 1.5 million new home starts is a key benchmark for many in the wood products industry. The relatively high lumber and wood panel prices during 2017 – among some of the highest prices since the Great Recession – were good for most wood products manufacturers selling into the U.S. market.

A significant change in the Montana wood products industry developed near the end of 2017. The Montana cross-laminated timber (CLT) producer SmartLam announced its

plan to quadruple production and expand operations into the shuttered Weyerhaeuser sawmill site in Columbia Falls. SmartLam intends to triple current employment levels from 35 employees to over 100 by the end of 2019. Expansion of SmartLam and growth of the CLT industry have the potential to significantly expand markets for Montana-grown timber and Montana-milled lumber.

Predictions generally indicate improvements in national wood products markets. Projections for U.S. housing starts indicate a continued increase with the potential to reach approximately 1.3 million new homes in 2018.

A reduction in timber harvest and lumber production in western Canada are expected because of summer wildfires and a decades-long mountain pine beetle epidemic. In addition, the softwood lumber trade dispute between Canada and the U.S. is yet to be resolved. Reductions in the Canadian lumber supply should benefit U.S. manufacturers. Producers expect relatively high prices for lumber and other wood products – stemming in part from the reduced supply from Canada, continued uncertainty and speculation from the lumber trade dispute, growing U.S. home construction and possibly a boost from post-disaster rebuilding and restoration efforts.

These factors could benefit Montana’s forest industry, stimulating production, sales and employment for the state’s mills and loggers. Most Montana mills are operating well below full capacity. With an adequate supply of workers and logs, Montana mills could increase production to meet market demand. Most of the timber-processing facilities in Montana have indicated that limited log supply will continue to impact them in 2018. Wood products companies are also struggling to find qualified workers, a hurdle faced by many other Montana businesses. Thus, as the country recovers from wildfires and hurricanes in 2018, wood products markets look broadly favorable, while local conditions present some challenges for Montana’s forest industry.

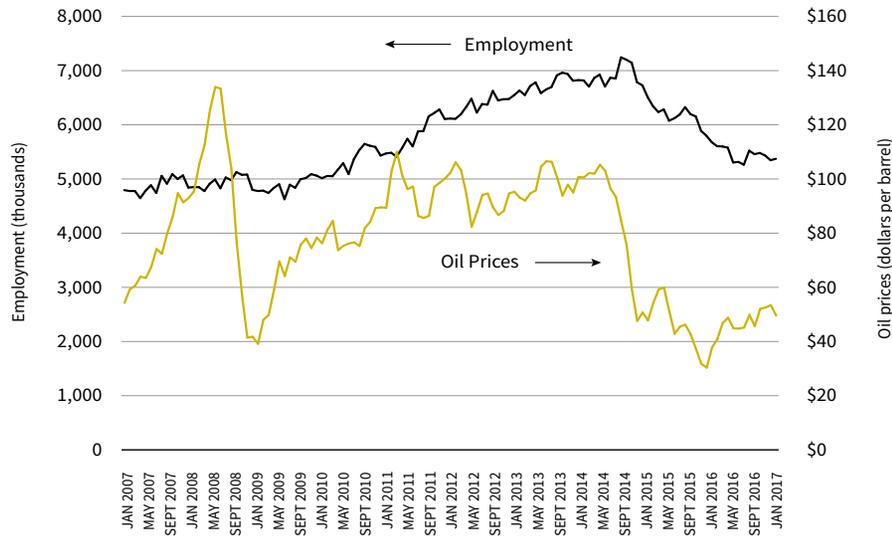
## OIL, NATURAL GAS AND COAL

### How Bad is Montana’s Oil Bust?

By Paul E. Polzin  
Bureau of Business and Economic Research at the University of Montana

The term “oil bust” conjures up images of families packing their belongings into the family car, shuttered stores and tearful goodbyes. Is that the case in eastern Montana?

Figure 1. Employment and oil prices, Richland County, Montana. Source: Bureau of Labor Statistics, QCEW and the International Monetary Fund.



Sufficient data are now available to gauge the local economic impacts of this global phenomenon and the findings are not nearly as gloomy as we first thought.

It has been more than three and a half years since those fateful days in the summer of 2014 when the world price of oil began to drop. At first, things were deathly quiet in the Bakken oil fields on the Montana-North Dakota border. Then after six months the other shoe dropped and the inevitable bad news about layoffs and closures began.

The broad outline of the long-term trends in oil prices and the number of jobs in Richland County are pictured in Figure 1. After decades of stagnation, employment began to increase as the technology-induced boom associated with horizontal drilling and fracking matured. The peak in Richland County occurred in mid-2014 when employment reached about 6,900.

Then it happened – the price of oil dropped and the number of jobs also turned downward. But neither oil prices nor the number of local jobs continued to drop. By mid-2017, the price of oil, which is always volatile, was in the \$50 a barrel range and the number of local jobs appeared to stabilize in the 5,300 to 5,500 range.

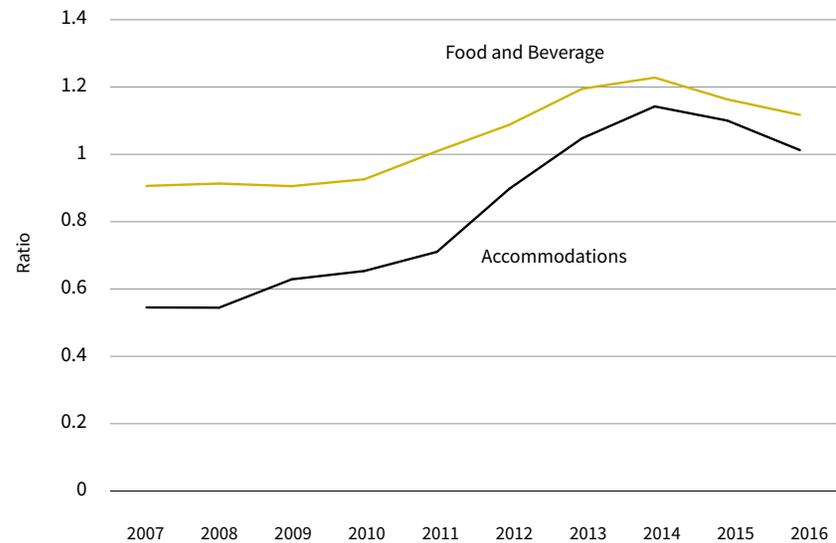
Table 1. Employment, Richland County 2014 and 2016. Source: U.S. Bureau of Labor Statistics, QCEW.

	2014	2016	Percent change
Total employment	7,146	5,480	-23.3
Mining	1,004	635	-36.8
All other industries	6,142	4,845	-21.1

The Richland County economy benefited from the oil boom. The number jobs during the first three months of 2017 was 12.5 percent higher than the corresponding period in 2007, before the boom began. This increase was more than double the statewide growth of 5.7 percent during the same period.

There is no doubt what caused the Richland County economy to decline. As shown in Table 1, mining employment, which does include some other small categories besides oil, dropped by almost 37 percent while the rest of the economy decreases only 21 percent between 2014 and 2016.

Figure 2. Ratio of Richland County wages to statewide average, selected industries. Source: Bureau of Labor Statistics, QCEW.



There may not be a lot of sympathy for high income workers losing their jobs, like the roustabouts earning more than \$100,000 or truck drivers making \$80,000. But what about the locals? Earlier research discovered that workers in the food and beverage service and accommodations industries in the Bakken area had much faster wage growth than their respective statewide averages. These industries often provide entry level positions for workers.

The latest data shown in Figure 2 confirm that these workers have lost only a portion of their wage gain. Both industries had below average wages in Richland County before the boom began. Both increased rapidly relative to their respective statewide averages reaching a peak in 2014. There has been a slight deterioration since the peak, but Richland County wages in both industries are still greater than the Montana averages and well above where they were in 2007.

## MANUFACTURING

### *Diverse and Growing*

By Todd A. Morgan, Paul E. Polzin and Paddy Fleming  
Bureau of Business and Economic Research at the University of Montana and the Montana Manufacturing Extension Center at Montana State University

Montana manufacturing employment has grown much faster than U.S. manufacturing since the Great Recession. According to the U.S. Department of Commerce, Bureau of Economic Analysis, full- and part-time U.S. manufacturing employment rose from 12.1 million workers in 2010 to 13.1 million in 2016, an increase of 8.3 percent. Montana manufacturing employment increased from 19,841 in 2010 to 23,896 in 2016, an increase of 20.4 percent.

The strong growth in Montana manufacturing employment occurred despite permanent closures in the paper and wood products industries. Employment in the wood and paper products industries decreased from more than 3,200 in 2010 to about 3,000 in 2016, a decline of 7.2 percent. Employment in all the other components of Montana manufacturing increased from 16,598 in 2010 to 20,885 in 2016, an increase of nearly 26 percent.

New and expanded manufacturing establishments were a major contributor to the strong growth in Montana. Numerous national and multinational corporations have made acquisitions in Montana in the past 10 years, including GlaxoSmithKline, Boeing,

Applied Materials, Newport and FLIR. None of these corporations initiated green-field startups, but instead acquired existing Montana manufacturers.

Two manufacturing sectors with significant employment growth were fabricated metals, adding more than 1,200 jobs (65 percent growth) from 2010 to 2016; and beverage producers, adding nearly 580 jobs (75 percent growth) over the period. Non-metallic mineral products also grew by nearly 500 employees or roughly 53 percent; while computers and electronics manufacturers added about 390 jobs, which was about 89 percent growth.

According to the U.S. Department of Labor, Bureau of Labor Statistics, there were 1,479 manufacturing establishments with employees operating in Montana during 2016. The number of manufacturing establishments has grown by 185 (14 percent) since the 2011 low of just 1,294 firms. There were 267 food and beverage manufacturers and 250 fabricated metal shops in Montana during 2016. Most Montana manufacturers are small businesses – 85 percent of Montana’s manufacturing businesses have fewer than 20 employees.

The production of alcoholic beverages is a rapidly growing industry in Montana. Distilleries, wineries and breweries together employed 950 people in 2016, up from 267 in 2011. Breweries added the most (514) employees. In 2016, there were 752 workers in breweries and 154 in distilleries. The growth in alcoholic beverages was mostly due to new firms rather than growth in existing firms, however several existing breweries and distilleries are planning for expansion. The total number of alcoholic beverage producers increased from 25 in 2010 to 87 in 2016.

The fastest growing subcategories of fabricated metal products were small arms manufacturing, and architectural and structural metals manufacturing. Small arms manufacturing employment increased from 148 workers in 2010 to 381 in 2015. These firms are located throughout the state, but many are in the Flathead Valley and Bitterroot Valley. Employment in structural metals manufacturing rose from 727 in 2010 to 998 in 2015, an increase of more than 37 percent.

According to surveys, manufacturers in the U.S. and Montana continue to struggle with attracting a qualified workforce. In response, manufacturers are automating some highly strenuous or monotonous manual labor jobs. Manufacturers also indicated that growing their businesses is one of their biggest challenges in the near future. Many are considering new product lines, new markets and exporting as methods of growing their businesses. Similar to national trends, many of Montana’s manufacturing company

owners are retiring and their companies currently do not have ownership transition plans. This could put many high-paying manufacturing jobs in jeopardy.

## TRAVEL, TOURISM AND RECREATION

### Season of Wildfires

By Norma P. Nickerson

Institute for Tourism and Recreation Research, W.A. Franke College of Forestry and Conservation at the University of Montana

Over 1 million acres burned in Montana in 2017, creating smoky conditions throughout the state. This contributed to a reduced length of stay for some visitors and affected outdoor recreation participation for residents and nonresidents alike. The Institute for Tourism and Recreation Research conducted three different surveys about the 2017 impact of wildfires on visitors, tourism business owners and residents.

Of the 607 panel survey respondents who did not travel to Montana this summer, 9 percent had planned to travel to the state, but canceled due to smoke or fire. Of the 628 nonresidents who did visit Montana between July and September 2017, 4 percent shortened their stay with an average reduction of 4.5 days. Of those who shortened their stay, 30 percent continued their vacation elsewhere (CA, ID, MN, MI, ND, SD, NV, OR, UT, WY and Canada). Seven percent of these respondents canceled additional trips they had planned for the summer in Montana.

Changes in visitor volumes because of the wildfire season were readily apparent to tourism business owners. Twenty-six percent of business owners surveyed did not have any change in volume, but 55 percent experienced a decrease while 11 percent had an increase in visitor volume. As many as 25 percent of businesses had to cancel or postpone an event due to the smoke or fires and 13 percent had to cancel guided trips. Business volume was affected most in western Montana, but fires did impact tourism businesses throughout the state (Figure 1).

A majority of Montana residents were impacted by the wildfire season of 2017. Seventy-six percent of Montanans said they frequently experienced a decrease in air quality because of smoke. Only 37 people (2 percent) out of 2,050 respondents said they never experienced air quality issues. Sixty-six percent of Montana residents said the smoke affected their participation in outdoor activities near their home from hiking and fishing,

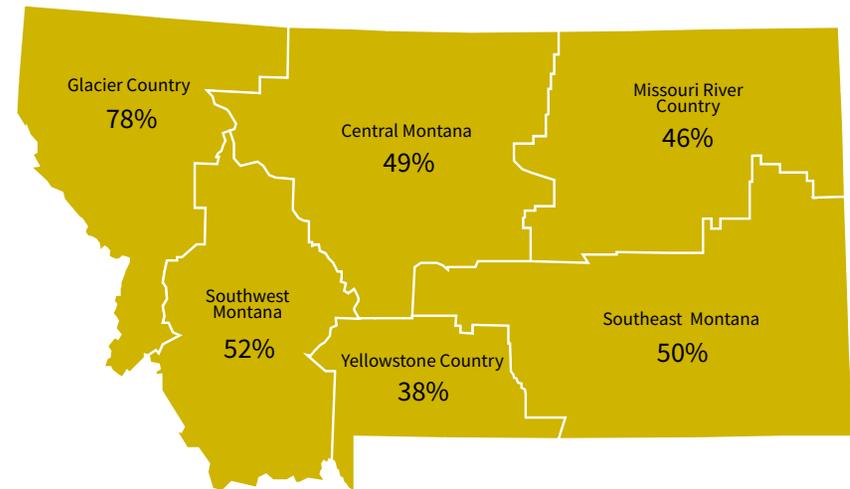
to running and children's outdoor activities. Traveling in and around Montana was impaired for 37 percent of Montanans due to wildfires with 66 percent canceling travel, 34 percent rescheduling, 42 percent changing their destination in Montana and 31 percent changing their travel route.

Climate scientists expect this year's fire season and its impact on Montana's visitors, businesses and residents to become the status quo. The 2017 Montana Climate Assessment report ([www.montanaclimate.org](http://www.montanaclimate.org)) states that Montana's average temperature increased between 2 to 3°F from 1950 to 2015 and is projected to increase 4.5 to 6° by midcentury. The flash drought after the quick snow melt in 2017 is yet another indicator of changes.

Adaptation for tourism businesses, visitors and residents will be necessary. Promoting the months of August and September may have to shift to April, May and October. Montanans and out-of-state visitors are resilient, but the fire season is likely to become the new shoulder season for marketing.

Looking to 2018, 47 percent of Montana tourism business owners expect an increase over this year and 44 percent expect to stay the same. With so many experiencing a decrease in 2017, staying the same is not necessarily a good prediction for businesses in Montana.

Figure 1: Percent of tourism businesses who said the 2017 wildfire season decreased business volume. Source: Institute for Tourism and Recreation Research.



# HEALTH CARE

## Recent Trends in Health Care Spending

By Bryce Ward

Bureau of Business and Economic Research at the University of Montana

Every five years, the Center for Medicare and Medicaid Services releases data on health care spending in each state. Its most recent release occurred in 2017, including data through 2014.

In 2014, total spending on personal health care in Montana was \$8.23 billion. Figure 1 shows the breakdown of this spending across major categories. Forty-five percent of this spending (\$3.73 billion) went to hospitals, 26 percent (\$1.65 billion) on physicians and clinical services, and 9 percent (\$711 million) went to prescription drugs. The remaining 26 percent was spent on things like dental care, nursing homes and home health.

Personal health care spending in Montana amounts to \$8,221 per person, slightly above U.S. spending per capita (\$8,045). This represents a change since the previous data release, which covered 1980-2009. Historically, Montana has spent less per person than the nation. However, health care spending per person in Montana has grown faster than in the U.S. in recent years.

Since the last data release, which covered through 2009, health care spending per person grew by 23 percent or slightly more than 4 percent per year. Since 2009, hospitals (28 percent), other health services (44 percent), other professional services (35 percent) and home health (30 percent) spending per capita all grew faster than overall personal health spending. Spending per capita grew faster in Montana than in the U.S. in every category except nursing home spending and prescription drug spending.

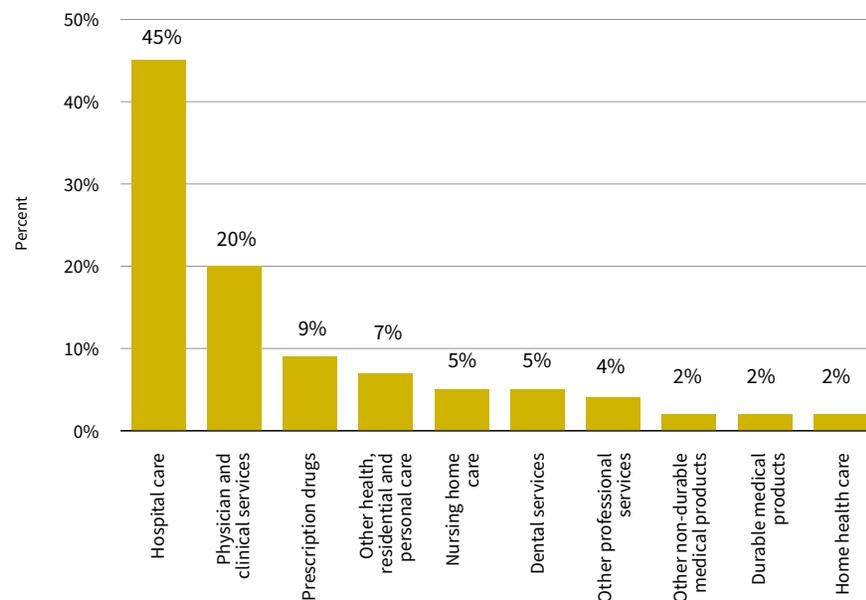
Health care spending per enrollee by Montana's private insurers was \$3,882, which is only 85 percent of the U.S. level (\$4,551). Spending by Medicare in Montana was also low at \$8,238, which is 75 percent of the U.S. level (\$10,986). Medicaid spending, though, has traditionally been high in Montana (\$9,378 vs. \$6,815). However, these data do not include the period after Montana expanded Medicaid. It is likely that spending per beneficiary fell with the inclusion of the expansion population. It should also be noted that the major insurers covered only 61 percent of total personal health spending in

Montana. This is fourth lowest percentage in the country. The remaining spending comes out-of-pocket or from other federal programs (CHIP, VA, IHS), etc.

Since 2009, private health insurance spending per enrollee grew at roughly the same rate as overall spending (24 percent). This was noticeably faster than the rate of growth nationally (17 percent). Medicare spending per enrollee grew more slowly (11 percent), but spending growth in Montana was faster than the U.S. (6 percent). Medicaid spending per enrollee was the same in 2009 as it was in 2014 in Montana and in the U.S., although there were some fluctuations in the intervening years.

These data are descriptive. They describe what has happened, but they do not explain what is driving the changes in Montana's health care spending. In general, researchers find that changes in health care spending across place reflect differences in prices, differences in aging and health, differences in the share of the population covered by insurance, differences in personal income and differences in health care capacity. Which of these factors are driving changes in Montana's health care spending will require additional research.

Figure 1. Breakdown of health care spending in Montana by major category. Source: Centers for Medicare & Medicaid Services.



# TRANSPORTATION AND LOGISTICS

## Worldwide Expansion Revives Growth

By Paul E. Polzin

Bureau of Business and Economic Research at the University of Montana

The global economic outlook continues to gain traction and that is good news for Montana’s logistics and transportation industry. Worldwide expansion is gaining momentum as growth continues across developed and emerging economies. Previously, world growth suffered from the stagnant EU economies, debt crises in numerous countries and the slowing of the Chinese economy. Reviving growth means that more goods are being produced, sold and transported.

Montana’s long-distance trucking industry and railroads are directly affected by world trends because they transport goods and material from the state and from one part of the nation to another. The earnings and employment of Montanans working in long-distance trucking and railroad industries are important.

As reported in Table 1, there were 2,715 workers in long-distance trucking during 2016. These data do not include truckers employed by out-of-state companies who are simply driving through Montana.

Missoula and Yellowstone counties are both located on Interstate 90, the east-west transcontinental freeway, and are the two major centers of long-distance trucking in the state. Taken together, they accounted for slightly more than one-half of total statewide employment.

There were sizable gains in 2011 and 2012 as economies rebounded from the Great Recession. Then, statewide employment stalled from 2013 to 2015 as worldwide condi-

tions worsened. Most recently, slight upticks in statewide and Missoula County employment in 2016 may be associated with the improving world economy.

Two major rail systems cross Montana: the Hi-Line and the low line. BNSF and Montana Rail Link are the two major railroads in the state with several smaller lines serving specific areas. The major centers of railroad employment are Billings, Missoula, Havre and Whitefish.

Reliable local data for the latest trends in the rail industry are not available because federal confidentiality regulations prohibit the release of Montana data for railroad employment. Instead, reports from the individual companies and national rail data are available to analyze railroad trends.

National rail traffic statistics are reported by the Association of American Railroads (AAR). Over the past decade, railroads have benefited from overall global growth. In addition, technological improvements, such as unit trains and multi-modal containers, have improved productivity and reduced costs. AAR carload shipment data show an increase of 3.7 percent during the first 42 weeks of 2017 over the corresponding period in 2016.

BNSF reports overall increases along its northern routes, which run through Montana. Increased coal, which is counter to U.S. trends, and agricultural traffic are the primary reasons. In addition, general industrial traffic has turned around and added more traffic. BNSF announced that it has recalled all employees furloughed during the past few years and is considering adding additional workers.

The outlook for both long-distance trucking and railroads depend greatly on economies in the rest of the world – and the prospects are looking up. Last year at this time, the world was looking at declines or sputtering growth in the EU, Asia and elsewhere. This year the growth prospects are uniformly better.

Table 1. Employment in long-distance trucking, Montana and selected counties. Source: U.S. Bureau of Labor Statistics, QCEW.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Montana	2,488	2,378	2,512	2,435	2,421	2,509	2,593	2,659	2,652	2,692	2,715
Missoula County	705	643	504	472	452	556	591	605	539	546	558
Yellowstone County	659	642	733	822	810	872	871	845	857	879	846

# TECHNOLOGY AND INNOVATION

## *Montana's Tech Hub Gains Visibility*

By Christina Quick Henderson  
Montana High Tech Business Alliance

In 2017, the story of Montana's tech boom captured the attention of national media like Fast Company, the Associated Press and CBS News.

Last April, the Montana High Tech Business Alliance released a report in partnership with MonTEC and the Blackstone LaunchPads at the University of Montana and Montana State University entitled, "A New Frontier: Entrepreneurship Ecosystems in Bozeman and Missoula, Montana." This was the first major study of entrepreneurship in Montana, funded by the Ewing Marion Kauffman Foundation.

The report confirmed that Missoula and Bozeman enjoy some of the highest levels of entrepreneurship in the nation in terms of startup and high-growth companies.

It found Montana entrepreneurs:

- Leverage dense networks of active local support.
- Enjoy an excellent workforce with high retention rates.
- Come from all over the country with Silicon Valley or international experiences.
- Target national and international markets, and procure their inputs globally.

Montana's high levels of entrepreneurship are supported by organizations such as nonprofits, university-related organizations and economic development groups. Also, entrepreneurs in Montana consider elected officials to be champions of entrepreneurship – this was in sharp contrast to cases in other states.

Much of the growth in Montana's startup community is driven by the tech industry.

According to the annual Montana high-tech industry survey conducted by the Bureau of Business and Economic Research at the University of Montana, Montana's high-tech industry is growing seven times faster than the overall Montana economy, paying twice the median wage and generated more than \$1 billion in annual revenues in 2016. High-tech companies surveyed planned to create nearly 1,000 jobs in 2017.

The Kauffman-funded report found spinoff entrepreneurial patterns in Bozeman related to that community's photonics and software clusters. For example, more than 40 photonics companies have sprung up in Bozeman since 1980 and more than 15 new ventures have been launched by former RightNow employees since that firm's sale to Oracle in 2011.

Though much of the entrepreneurial activity in Montana is concentrated in Bozeman and Missoula, the report also found that Montana's ecosystem spanned hundreds of miles and included both rural and larger communities, ranging from Columbia Falls to Butte, Lewistown and Malta.

Venture capital and angel investment in Montana is expanding to match growth in the tech sector. Next Frontier Capital in Bozeman has made more than 10 investments in Montana high-tech companies since raising its first \$21 million fund in 2015, including firms like SiteOne Therapeutics, Submittable, Clearas Water Recovery, Quiq, Orbital Shift, IronCore Labs and Blackmore Sensors. Those local investments are generating additional investments from out-of-state firms.

In October 2017, Frontier Angels, a Montana-based group of financial investors, announced its reorganization with plans to grow from 35 to more than 100 members while expanding its funding efforts for startups across the state.

Frontier Angels' investment focus will be on technology-based companies, including industries like software, biotech and energy. The group has invested roughly \$15 million into more than 50 Montana tech-based companies since 2006.

Next Frontier Capital also announced the closing of a second \$22 million fund in October, which indicates the momentum behind tech investment in Montana will continue into 2018 and beyond.

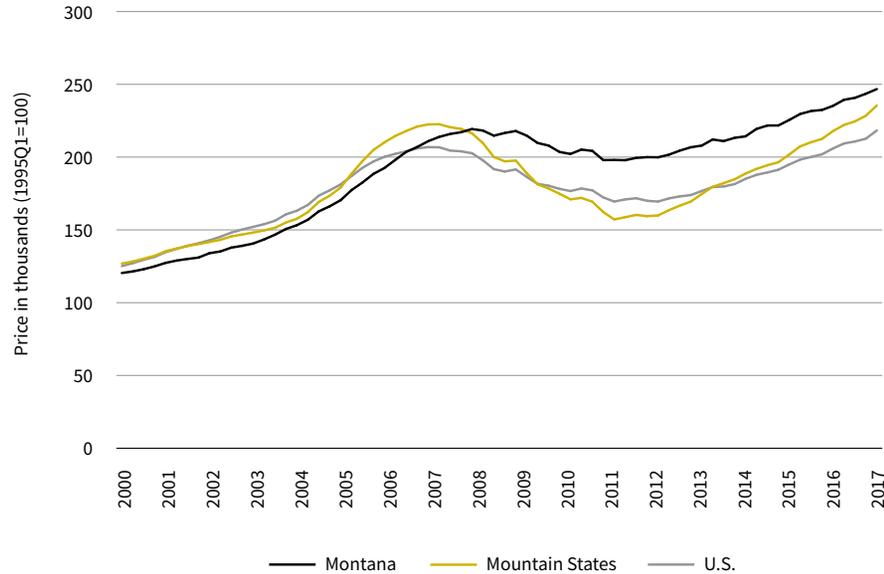
# REAL ESTATE AND CONSTRUCTION

## *Housing Starts Leveling Off*

By Brandon Bridge  
Bureau of Business and Economic Research

The Montana housing market continues to show strength in several areas and remains firmly above prerecession levels. Montana home prices have continued their upward

Figure 1. Housing price index, 2000Q1-2017Q2. Source: Federal Housing Finance Agency.



trend in a similar fashion to that witnessed over the past several years. Figure 1 shows the housing price index in Montana as higher than the nationwide index and composite price index of the Mountain States.

Throughout Montana average sale prices vary considerably, though they continue to be highest in Gallatin County. The volume of home sales across the state is also relatively strong with the average number of home sales per county at more than 328 – this again comes with large variation in the counties. Six counties in the state of Montana recorded more than 1,000 home sales in 2016 with Gallatin and Yellowstone counties recording over 2,000 sales each.

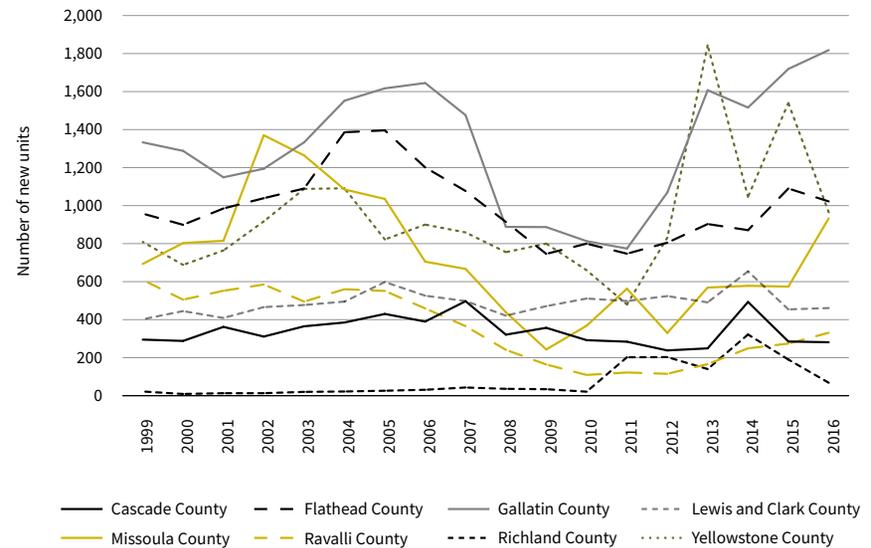
Nationally speaking, the housing market is experiencing steady growth in home prices, as well as purchase volume when it comes to single-family homes. Mortgage interest rates remain low by historical standards, which is likely influencing this trend. Due to this strong and continued growth in prices, total nationwide homeowner equity has steadily increased over the past five years and is now higher than it was during the pre-recession peak (American Enterprise Institute).

Nationwide mortgage performance overall has returned to relatively normal levels. Indicators of the national mortgage market have improved over last year. A few of these indicators, such as loan delinquency rate, foreclosure presale inventory rate and foreclosure starts are all down relative to last year, pointing to a strengthening of the mortgage market in the United States.

The total number of housing starts in Montana has leveled off over the past three years and is still below the number of new construction experienced prior to the recession. While some counties are showing strong signs of new construction, others are experiencing slow-downs. Figure 2 illustrates some of the new construction variation that is being experienced across counties in the state. Figure 2 shows three different general scenarios.

First, in areas such as Gallatin, Missoula and Ravalli counties we see medium to strong increases in new construction. Second, in areas like Cascade and Lewis and Clark counties we see a relatively flat trend with new housing units in 2016 being close to that experienced in 1999. Third, is a downtrend in new construction, which can be seen in Yellow-

Figure 2. New housing units in selected Montana counties. Source: Bureau of Business and Economic Research.



stone and Richland counties. This downtrend offsets the growth experienced elsewhere, as new construction in Yellowstone County in 2016 was little more than half of where it was in 2013, prior to the drop in oil prices.

All said, real estate in Montana is a complex market across a large geography that is impacted in several directions by multiple competing market forces.

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Since 2013, BNSF has been instrumental in locating 30 new or expanded facilities in Montana, creating nearly 200 jobs and \$200 million in investments. Projects include the Port of Northern Montana in Shelby, Terracor Logistics in Bainville, and Columbia Grain in Sweetgrass.

Supporting BNSF's rail network in Montana are nearly 2,500 dedicated men and women who earn a combined payroll of nearly \$195 million.

The BNSF Foundation has contributed more than \$3.2 million in donations to Montana charities since 2010.





*We're keeping Montana  
picture-perfect.*

NorthWestern Energy has invested more than \$1 billion in providing 60 percent of Montana's energy through renewable resources like wind and water. This major investment is part of our ongoing commitment to responsibly power our homes and businesses, protect our environment, and keep our state beautiful now and for future generations.

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**NorthWestern**<sup>®</sup>  
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*Delivering a Bright Future*



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