2017 MONTANA ECONOMIC REPORT

AN ANALYSIS AND ASSESSMENT OF MONTANA'S ECONOMIC PERFORMANCE

BUREAU OF BUSINESS AND ECONOMIC RESEARCH
UNIVERSITY OF MONTANA

Welcome to the 2017 Montana Economic Report

Dear Fellow Montanans,

Welcome to the 2017 Montana Economic Report produced by the University of Montana's Bureau of Business and Economic Research (BBER).

The Montana Economic Report provides timely, in-depth analysis of the various market segments that comprise our state's economy. It's a valuable tool in any business leader's toolbox. I look forward to BBER's Economic Outlook Seminars, where this report will take center stage!

Montana's broadband telecommunications infrastructure is a key component to economic vitality in virtually all business sectors. Last year, co-chairmen Bill Squires (Blackfoot) and Rob Ferris (Vision Net) released the findings and recommendations of the Interconnectivity and Telecommunications Key Industry Network established by Governor Steve Bullock's Main Street Montana Project. Among other things, they found exponential growth in the number of jobs depending on broadband and information technologies.

Another study released in October by the Montana Telecommunications Association (BroadbandMT.com) reported that Montana ranks No. 1 in the country in telecommuting. Montana's rural broadband providers have invested $250 million into the state's broadband infrastructure since 2011 – and that doesn't include the collateral benefits of broadband connectivity on the various market segments analyzed in this report, such as natural resources, agriculture, manufacturing, education, health care, travel and leisure just to name a few. Montana businesses have much to be proud of and I'm happy to report the significant contributions of our industry.

I hope the thoughtful and thorough analysis provided by BBER in this year's economic report helps inform your decision making in the coming year. Congratulations to BBER for producing yet another useful report and to Montana's business leaders for driving our economy to new heights.

Sincerely,

Geoff Feiss
General Manager
Montana Telecommunications Association

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 BBER's Economic Outlook Seminars, held throughout the state. For more information about the bureau and to access this report online, visit 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 School of Business Administration 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 Seminars 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 if we can be of any help to you or your business.

2017 Montana Economic Report

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THE YEAR IN REVIEW

Statewide Economic Performance

A Tale of Two Years

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

The remarkable performance of the Montana economy in 2015 did not carry into the following year. Inflation-corrected nonfarm earnings growth for 2015 was just short of 4 percent, considerably stronger than at any point in the post-recession recovery. But continued deterioration in energy and natural resources industries, a slump in transportation and logistics, and abrupt changes in construction activity in some markets combined to a produce a much different picture for 2016.

Assessing the performance of the state economy has always required judgement, as well as analysis. That's because each piece of data we have on hand fail one of these criteria: timeliness, completeness and understandability.

Perhaps the broadest and most comprehensive information on the Montana economy comes from the nonfarm earnings report from the U.S. Bureau of Economic Analysis. But it is only available through the year 2015, so it can't help us understand what has happened since. On the other hand, Montana tax collections become available each month with little delay, but their interpretation is clouded by the sometimes noisy relationship between taxes and economic activity.

Somewhere in the middle are the data on wages and employment that most employers with payroll employees submit as part of the unemployment insurance system. In dollar terms, they miss about a third of total activity, but their historical track record of predicting the total is quite good – and they're available for at least the first half of 2016.

The wage data show an abrupt slowdown in growth that commenced with the start of the year. As shown in Figure 1, the 1.6 percent growth in inflation-corrected wages for the first half of 2016 (using year-ago wages as a base), was a big contrast from the 5.5 percent growth for the six months that preceded it. During this same period, the U.S. economy was registering anemic growth in GDP of just 1 percent. Weak growth was also consistent with weakness in the state's general fund revenue collections.

The detail of a few select industries shown in Figure 1 gives some clue to the cause. In addition to the steep decline in energy and natural resource-related wages – the mining sector saw wages decline by 19.3 percent in the first half of 2016 – there was marked weakness in transportation and wholesaling, and a slowdown in construction. The latter was pronounced in Billings, the metro area with the closest ties to the energy industry.

When measured by employment, the 2016 slowdown is much harder to detect. Montana continued to see strong payroll employment growth of 2.5 percent rate in the first half of the year, only slightly down from the 2015 average. The picture is consistent with declines in high paying resource-based jobs being offset by other industries.

Figure 1. Inflation-Corrected Wage Growth, Montana.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

The Performance of the BBER Forecast

Recasting History

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

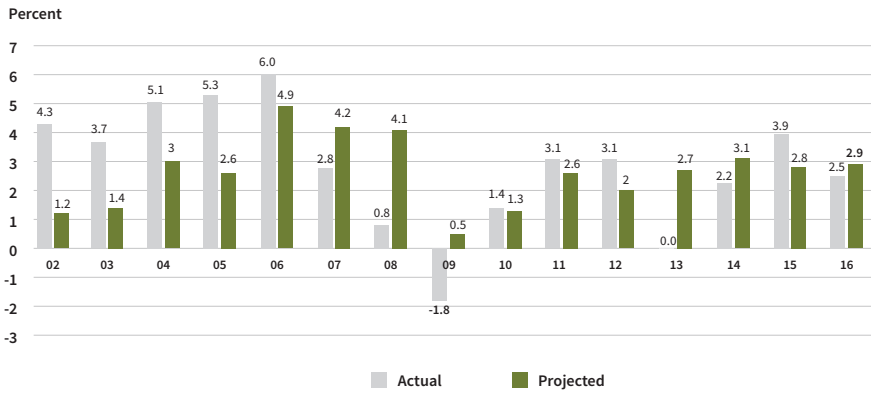
The Bureau of Business and Economic Research's most recent forecasts of Montana's economic growth have been off in both directions – too high and too low – in recent years, but the overall performance has been reasonably good.

After over-forecasting growth in 2014, when the 2.2 percent published growth in inflation-adjusted nonfarm earnings fell short of our 3.1 percent forecast, we under-estimated growth in the following year. Growth in 2015 was a surprising 3.9 percent, well in excess of our 2.8 percent forecast. As can be seen from Figure 1, the forecasts have been reasonably accurate for the past three years.

Thus, our forecast of 2.9 percent growth in 2016 was a bit optimistic, with the current expectation of actual growth coming in short, at 2.5 percent.

The business of analyzing forecast accuracy is complicated by the data revision process that is conducted for all economic statistics. The state-level income statistics, particularly for a less-populous state such as ours, are particularly susceptible to revision.

Figure 1. Actual and Projected Change in Real Nonfarm Earnings, Montana, 2002 to 2016.



Source: Bureau of Business and Economic Research, U.S. Bureau of Economic Analysis.

As the graph shows, our forecast in the boom years before the Great Recession now appears to be much lower than official statistics indicate. As recently as last year, those historical growth figures were a full percentage point or more lower than the now-revised data indicate, putting our old forecasts much closer to how growth was then portrayed. The revisions occur as better source data becomes available – from tax records, trade receipts and other source data.

Our largest historical errors came during the Great Recession, where we were in good company with other forecasters. We missed the weakness in the 2008 economy by a wide mark and underestimated how severe the recession would eventually be. The performance of the forecast in subsequent years, at least in this rendering of the official data, has improved.

Montana's Regions and Cities

Western Cities Lead the Way

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

The recent arrival of income data for Montana's counties make it official – 2015 was a very good year. With the exception of oil-patch counties, growth picked up across the state as measured by real (inflation-corrected) nonfarm earnings. While that news is certainly welcome, it's also a bit dated. Preparing our outlooks for 2017 and beyond, more recent data for the state shows a slowing of growth in 2016.

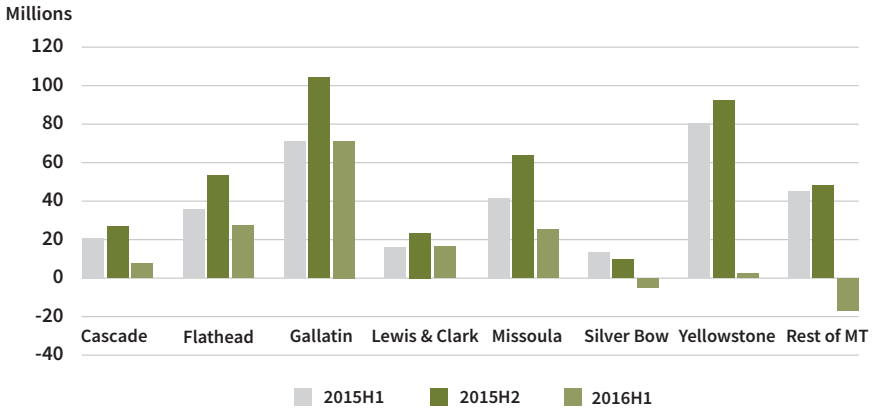
The broad patterns of growth that began in earnest in 2014 have continued. The big picture shows growth returning to the more populous western counties in the state, while eastern and agriculturally oriented counties have hit economic turbulence. A sizable list of industries have continued to drive overall growth, which is a departure from the pre-2014 pattern of growth concentrated in a shorter list of industries that include energy, mining, agriculture and manufacturing.

The Regional Scorecard

Some of the state's urbanized areas are performing better than others. In dollar terms, as shown in Figure 1 (on page 6), the growth in Gallatin County remains the strongest in the state. As measured by inflation-corrected payroll wages of jobs covered by the unemployment insurance system, which accounts for about two-thirds of economic activity, Gallatin County's total payroll was about $73 million higher during the first half of 2016 than the same period of the preceding year.

Growth in Yellowstone County, the state's largest, was largely on par with Gallatin until

Figure 1. Inflation-Corrected Wage Growth, Millions of Dollars, Montana.



Source: U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.

suffering an abrupt slowdown in the first half of 2016. In the next tier were the western counties Missoula and Flathead, followed by slower growth in Cascade and Lewis and Clark counties. The latter two counties had either mild or non-existent recession-related declines earlier in the decade, but have struggled to post the stronger growth some other parts of the state have experienced. Silver Bow County's slide into wage decline during the first half of 2016 is almost entirely attributable to continued weakness in metal prices.

As seen in Figure 1, the slowdown in the state's total wage growth in the first half of 2016 was reflected in almost every part of the state. Some of this slowdown can be attributed to a slight drop in health care wages across the state, as the big increases due to Medicaid expansion did not continue into the following year. But in other regions there were more specific causes of the 2016 growth slowdown.

Bozeman (Gallatin County)

Not only did the growth acceleration in Bozeman predate the improved economic performance of other western counties by nearly a full year, it remains the strongest in the state. There are clear signs of strain on the region's housing and transportation infrastructure – median home prices have pushed beyond $300,000, the highest of any of the state's most populous counties. Growth continues to be driven by strong home construction, software and technology related professional services, and increases in visitor spending.

Billings (Yellowstone County)

The sudden cooling of the Billings economy in 2016 was centered in its traditionally dominant goods distribution and energy services employers. The continued oil price slump caused the closure of oil producers, such as SM Energy, as a once-long list of oil producing companies in the Bakken fold into a smaller number. The big decline in construction-related wages came about as refinery projects came to a conclusion, but it exposed the weakness of residential building in the region. Other important sectors like health care have performed better, but declines in distribution and energy have been hard to overcome.

Missoula (Missoula County)

Missoula's stronger growth in 2015 was helped by a robust expansion in health care that moderated in 2016. Manufacturing picked up the baton and helped growth in 2016. The growth in retail and accommodations activity were signs of continued strong visitor spending. Growth in the public administration activities of government were stronger in Missoula than any other part of the state. Of concern is the weakness in professional services growth, which contracted in the beginning of 2016, and the continued weakness in construction.

Kalispell (Flathead County)

While outperformed by Gallatin County, growth in Flathead County was helped along by the same in-migration-related construction and visitor spending growth experienced there as well. Professional services growth was also strong, as was health care. The strength of the dollar restrained the spending impacts of Canadians however, and the merger of Weyerhaeuser and Plum Creek was a blow to the city of Columbia Falls in particular.

Great Falls (Cascade County)

Big gains in manufacturing in 2015 were a bit restrained in 2016, but Cascade County's manufacturing growth remained one of the strongest in the state. The spark of growth is harder to find in the rest of the economy – with the exception of health care, where gains continued to be steady. A weaker growth trajectory in population can be seen in the relatively stagnant gains of industries like construction and retail trade. Challenges from lower grain and cattle prices loom large for the future.

Helena (Lewis and Clark County)

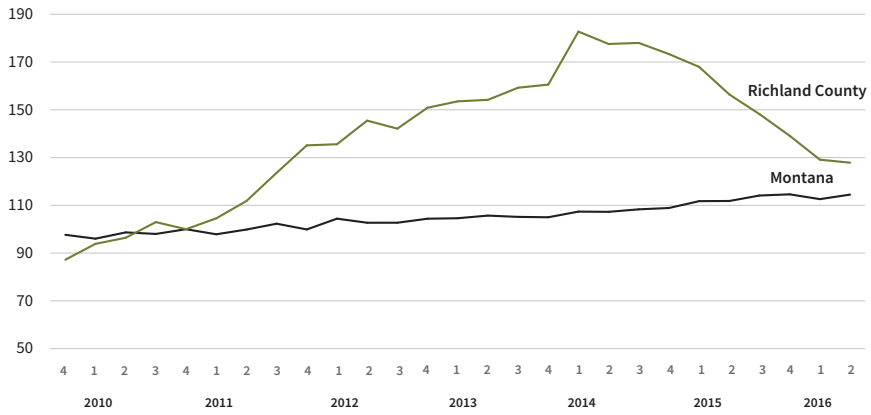
The seat of state government has had an economic performance record that is almost the inverse of the rest of the state – expansion during the recession and only weak growth afterward. The performance of health care and manufacturing were bright spots in the last year for Lewis and Clark County, with momentum carrying into 2016. Construction,

retail and even visitor spending were sluggish. Government growth played its usual stabilizing role, but growth was limited.

Butte (Silver Bow County)

Owing to the high rates of compensation and their direct ties to profitability, the wage growth performance Silver Bow County has been profoundly impacted by the price of copper and the Montana Resources mine. The current commodity price environment pushed mining wages down by 28 percent, offsetting a better performance of visitor spending, to produce an overall contraction in Butte wages in the first half of 2016.

Figure 2. Inflation-Corrected Wages, Montana and Richland County, Index, 2010Q4 = 100, Seasonally Adjusted.



Source: U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.

The Remainder of the State

Declines in the state's remaining 49 counties, taken as a whole, were a big contributor to the state's stumble in 2016. There were some bright spots, like Ravalli and Madison counties, which enjoyed good construction activity, but the precipitous drops in the fortunes of oil patch counties, such as Richland (Figure 2), were stark. Declines in spending, related to the agricultural economy's recent stumbles, are only beginning to show in the data on hand, but promise to be an additional headwind for growth.

State Revenue Report

A Year in Decline

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 revenue, 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 FY 2008. From FY 2015 to FY 2016, general fund revenue declined by over $78 million or 3.6 percent. This situation has traditionally occurred only during economic downturns like the Great Recession of 2008-09. Although Montana did not experience a recession in 2016, the plight of the natural resource industry played havoc on general fund revenues.

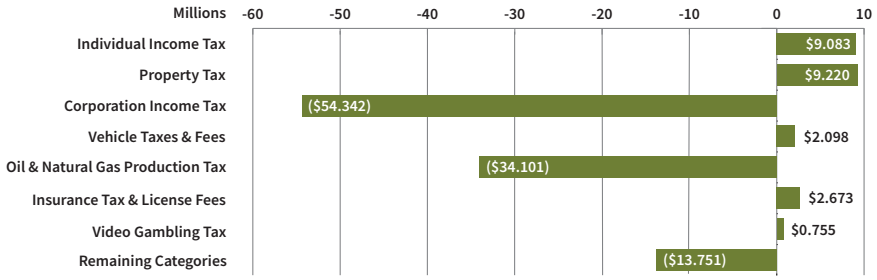
There are seven categories of revenue that contribute over 86.6 percent of the receipts to the state general fund. The remaining categories make up the difference of

Figure 1. State General Fund Revenue Collections, Year-Over-Year Change.

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Change	$123.668	($145.572)	($180.823)	$155.413	$88.396	$206.668	($0.578)	$122.609	($78.365)

Source: Legislative Fiscal Division.

Figure 2. State General Fund Revenue Collections, Change From FY 2015 to FY 2016.



Source: Legislative Fiscal Division.

13.4 percent. Figure 2 shows the seven major categories plus all the remaining sources lumped together.

Two of the major categories, corporation income tax and oil and natural gas production taxes, were below the FY 2015 amounts by $54.3 and $34.1 million, respectively. Both of these sources were negatively impacted by changes in oil, and to some degree, the natural gas industries. Lower commodity prices, as well as production declines, were prevalent in FY 2016, especially for the oil industry. Since a significant portion of the corporate tax base is dependent on oil activity, corporate tax receipts were below the FY 2015 amounts by 31.5 percent. According to the Montana Department of Revenue, about 44 percent of the corporate tax base includes manufacturing and oil and natural gas extraction businesses. Oil refineries are included in the manufacturing sector.

Individual income tax collections increased by only 0.8 percent compared to the strong rate of 10.8 percent observed the year before. As with corporate taxes, reduced oil play in the Bakken region had an impact employment levels and corresponding wage growth.

Major Economic Events of 2016

Speed Bumps or Slowdown?

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

Here are some of the major economic events that occurred in Montana in 2016:

- Montana general fund revenue collections experienced an unexpected downturn that set in with the beginning of the calendar year. Big declines in oil and gas production taxes, corporate income tax and a surprising weakness in individual income tax collections added up to a 3.6 percent decline in revenues that made FY 2016 look more like a recession year than a year of economic growth.
- Visitor counts for Montana's major tourist attractions pointed to a big year for the tourism economy in 2016, with 10-month totals for Yellowstone National Park and Glacier National Park running well ahead (3.6 percent and 20 percent) of last year's record totals.
- A correction in cattle prices settled in with a vengeance toward the end of 2016, ending a three-and-a-half-year run of higher prices, brought about by higher global demand and supply disruptions in other states affected by drought. Calf prices settled in the neighborhood of $144 per hundred weight toward the end of 2016, or less than half of what ranchers were receiving in the early part of 2015.
- The acquisition of Plum Creek Timber Company by rival Weyerhaeuser was completed in February, a considerable blow to the Columbia Falls-area economy. The combined company's main office in that city is scheduled to close at the end of this year, and the closure and shifting of work from the plywood and lumber operations there ultimately affected 100 jobs in Flathead County.
- S&K Technologies, a tribal-owned company headquartered in Polson, secured a $4.2 billion maintenance and procurement contract from the U.S. Air Force, the largest such contract ever received by the company. While the many of the jobs affected are outside of Montana, it was a notable milestone for one of the most successful tribal-owned businesses in the nation.
- Talen Energy and Puget Sound Energy, owners of Colstrip Units 1 and 2 reached an agreement, as part of a lawsuit settlement, to shut down those two units of the coal-fired electric generation station by no later than July 2022. The lawsuit was brought by the Montana Environmental Information Center and the Sierra Club alleging violations of the U.S. Clean Air Act. The timing of the closure of these two older, smaller units and the impacts of this action on the remaining operations are unknown.
- Power sharing in state government between the two major political parties changed little in the aftermath of the November elections, which saw incumbent Democrat Steve Bullock re-elected as governor and Republicans retain majorities in the House and Senate chambers of the Legislature. The state's Land Board swung over to a 4-1 Republican majority as the GOP won two statewide offices vacated by incumbent Democrats.

THE U.S. ECONOMIC OUTLOOK

The U.S. Economy

Is Optimism Finally Justified?

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

The lethargic performance of the U.S. economy in the first half of 2016 went largely unreported in the hubbub of a presidential election year. The labor market continued to add jobs and inflation remained dormant, yet the economy failed to reach even the mediocre 2 percent growth threshold, far short of the 2.7 percent growth predicted at this time last year.

Yet optimism abounds for next year, particularly in financial markets. Economic forecasts are more positive, perhaps because the U.S. economy remains virtually the only growth show in town on the global stage. But rising interest rates, higher inflation and some recovery in economies abroad, promise to make 2017 a year of important changes.

Here are the top 10 predictions for the economy in 2017, courtesy of our friends at IHS Markit, a national forecasting firm:

1. The U.S. economy will accelerate, even before any Trump stimulus. GDP growth will pick up in 2017 to 2.3 percent from 1.6 percent in 2016. Moreover, with tax cuts and infrastructure spending likely to be enacted next year, growth will pick up to 2.6 percent in 2018.

2. Europe's economic momentum will slow a little, primarily because of Brexit and political uncertainties.

3. Japan's economy will gain a little traction, thanks to a weaker yen. Growth is expected to rise from 0.7 percent in 2016 to 0.9 percent in 2017.

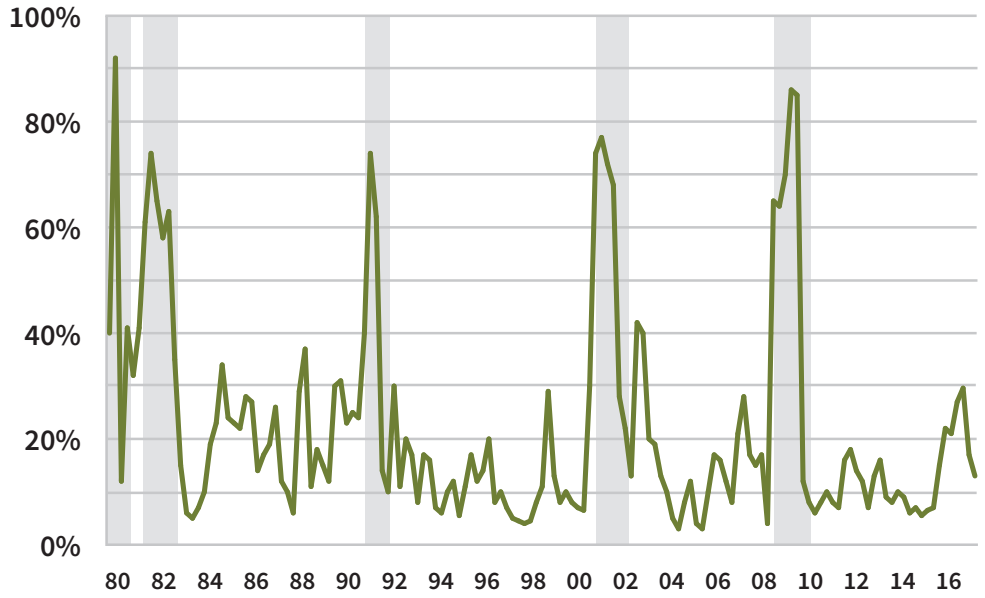
4. China's growth will grind down further, led by a housing construction slowdown. The Chinese government is in the process of removing stimulus. This will hurt the housing

Table 1. A Quick Look at the Numbers (Annual Rates).

	2016Q2	2016Q3	2016Q4	2017Q1	2017Q2		2015	2016	2017	2018	2019
Real GDP (% ch.)	1.4	3.2	1.8	2.4	2.4		2.6	1.6	2.3	2.6	2.3
Federal Funds Rate (%)	0.37	0.4	0.45	0.67	0.77		0.13	0.39	0.94	0.94	2.65
10-yr. T-note yield (%)	1.75	1.56	2.1	2.36	2.41		2.14	1.83	2.53	3.16	3.84
Brent Crude Price ($/barrel)	45.52	46.6	50.17	52	54.67		52.68	44	54.33	57.25	64.21
CPI (year/year % ch.)	1.1	1.1	1.9	2.5	2.5		0.1	1.3	2.5	2.4	2.5
Housing starts (Millions)	1.159	1.145	1.239	1.194	1.214		1.108	1.174	1.231	1.321	1.388
Light-vehicle sales (Million units)	17.1	17.5	17.8	17.4	17.5		17.4	17.4	17.5	17.6	17.6
Unemployment Rate (%)	4.9	4.9	4.8	4.7	4.6		5.3	4.9	4.6	4.3	4.1

Source: IHS Markit.

Figure 1. Recession Probability.



Source: Wells Fargo Securities.

sector, construction and heavy industries, lowering GDP growth from 6.7 percent in 2016 to 6.4 percent in 2017.

5. Emerging markets will do better, despite recent financial market pressures. With moderately stronger U.S. and global expansions, and rising commodity prices, emerging markets should do better over the next year.

6. Commodity prices will continue their upward trend. A gradual acceleration in demand and more supply restraints mean that commodity prices will keep rising over the next year – the recent OPEC agreement on production cuts will help.

7. Inflation rates will move up in many parts of the world. With the U.S. economy near full employment, the expected boost in growth from fiscal stimulus will translate into higher wage and price inflation.

8. U.S. interest rates will keep climbing, pulling rates up in some emerging markets. With expectations of stronger U.S. growth and inflation, IHS Markit predicts that the Federal Reserve will raise interest rates at least three times next year.

9. The U.S. dollar will appreciate more. The strong dollar became even stronger after the U.S. election. IHS Markit predicts that the greenback will keep appreciating over the next year – by the fourth quarter of 2017, the euro will briefly touch parity and the yen will fall to around 120 per dollar.

10. The level of uncertainty has risen, but risks of a recession remain low. IHS Markit estimates that the risk of either a U.S. or global recession in 2017 is no more than 25 percent.

Risk of Recession

It is interesting to examine how predictions of recessions have fared in recent years. The forecast probability of a recession in the near future, made by Wells Fargo Securities (Figure 1), closely mirrors the estimate made by IHS Markit, but the graph reveals just how quickly those assessments can change. The recent signs of faster growth potential in the national economy has helped recession fears abate in recent months, but if the past is any guide, the next recession will always surprise us.

THE MONTANA ECONOMY IN DEPTH

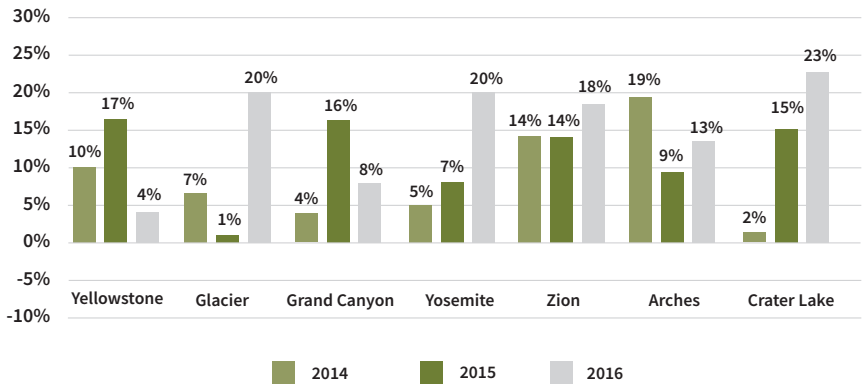
Beyond Glacier and Yellowstone

Challenges and Opportunities for Montana's Crowded Parks

By Norma P. Nickerson
Institute for Travel and Recreational Research at the University of Montana

Did you "Find Your Park" in 2016 to help celebrate the 100th birthday of the National Park Service? This was the theme throughout the year on TV, radio, special events and special programming. If you didn't visit a park, apparently you were one of the few who stayed away. The year 2016 will likely go down in the record books as the largest jump ever in year-to-year visitation for most national parks. With preliminary 2016 numbers,

Figure 1. Percent Change in Western National Park Visitation: 2014-2016.



Source: National Park Service; https://irma.nps.gov/Stats/.

Glacier was up 20 percent, Yosemite +20 percent, Zion +18 percent, Arches +13 percent and Crater Lake +23 percent (Figure 1). Yellowstone and Grand Canyon were up 4 percent and 8 percent respectively, but that follows increases of 17 percent and 16 percent in 2015.

While national park managers were prepared for a good year, many were trying to respond to an unprecedented increase in visitation that simply did not stop – each month broke the previous years' month visitation record. With Glacier and Yellowstone being Montana's premier vacation destinations drawing nearly half of all nonresident visitors to one or both parks in 2015, how do these destinations deal with the unprecedented growth?

Many say the parks are crowded. There are lines to get through entrance gates, lines at the bathrooms, campgrounds full by mid-morning and traffic is rush-hour-like on park roads. With duties similar to those of a mayor and city council of a city, Glacier and Yellowstone managers have the responsibility for public services, such as police, fire, sanitation, water, gas, roads and so on to provide a healthy living environment and to keep citizens safe. Along with that add the National Park Service mandate to "promote and regulate the use of the Federal areas known as national parks, monuments, and reservations…by such means and measures as conform to the fundamental purpose to **conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same** in such manner and by such means as will leave them **unimpaired for the enjoyment of future generations**." The mission – preservation of wildness for the enjoyment of the people – is appealing, but difficult to accomplish. Parks have the societal challenges of managing a city alongside a societal mandate to protect the wildlife, waters and vegetation from the people and for the people.

According to Ryan Atwell, Yellowstone National Park social scientist, "Yellowstone National Park has been experiencing steady growth in visitation over the past decade, topped off with a dramatic increase of 17 percent from 2014 to 2015 and even higher levels of visitation in 2016, the centennial year of the National Park Service. The park had not seen growth of more than 10 percent in over 25 years, so this dramatic short-term increase has shocked the park's current systems. We do not yet have a clear understanding of what is driving this growth, but suspect that retirement of baby boomers and international travel

may both be playing a part. Given long-term trends in visitation, we believe that demand for Yellowstone experiences is likely to continue increasing over decadal time frames."

Increased visitation is taking its toll on daily operations. In 2015, (with visitation up 17 percent) motor vehicle accidents with injuries were up 167 percent. Search and rescue incidents were up 61 percent. Emergency medical responses were up 37 percent and Life Flight evacuations were up 25 percent.

Figure 2. A Day in the Life of Yellowstone.

Snapshot: August 9, 2015
2 arrests before 9 a.m.
4 major motor vehicle accidents (MVAS) in the Old Faithful / Grant Area - 1 fatality - 7 EMS patients - 6 life flights - 1 ground transport
44 traffic stops.
1 interagency assist for an MVA with extraction and injuries north of Gardiner.
2 MVAS with no injuries at Canyon and Old Faithful.
2 cases of domestic violence (at the same time) at Old Faithful.
2 injuries with carry outs in the Canyon area.
1 ground transport for a back injury from Norris Geyser area.
1 interagency assist for a horse accident near Cooke City.
1 medical in the Madison campground for a visitor who sprayed herself with bear spray.
Numerous other calls.

Source: Yellowstone National Park; Ryan Atwell.

These statistics parallel those of a city, but within a national park. The resource management side has an entirely different set of challenges from those visitors. Results from researchers observing people in Yellowstone on four separate days this past summer showed that 226 total visitors were seen off the boardwalk/trail system in Norris Geyser Basin between 9:30 a.m. and 3 p.m., equating to an average of one person every six minutes ignoring the regulations. (Of those, 116 off-boardwalk violations were East Asian visitors.) This compares to 128 violations at Old Faithful and six violations at Midway Geyser Basin in four days.

High visitation numbers have been an economic boom to gateway communities. Third quarter resort taxes in West Yellowstone hit the $1 million mark in 2013, which increased by 13 percent in 2014, 10 percent in 2015 and will likely increase in 2016. On the other hand, the large visitor numbers have pushed the water and sewer facilities to their capacity during the summer in West Yellowstone.

In Glacier National Park, it has been common for Logan Pass parking lot to completely fill by 11 a.m. during July and August. Now, even with a shuttle system in place to transport people along the Going-to-the-Sun Road, the parking lot fills up by 9 a.m. most days. Apgar, the largest campground in Glacier with 194 sites, only had six total days in July and August with sites available. The other three large campgrounds did not have a single July day with an open vacancy. August was similar with only two days (August 13-14) where vacancies existed in the larger campgrounds.

Viewing the scenery along the Going-to-the-Sun Road (GTSR) is what most people do while in Glacier. Day hiking is the second highly sought out activity. The Avalanche Lake trail is evidence of the extreme increase in hikers. In 1988, about 30,000 people hiked the trail during the entire season compared to 90,000 in 2011. Similarly, the Highline Trail down to the loop on the GTSR saw about 1,800 hikers in 1988, which increased to over 40,000 in 2011. Much of the increase on these two trails has been attributed to the shuttle system, which provides access to visitors without a car. While the shuttle does allow more access, it has inherently created overcrowding and impacted resources.

While resource impacts can be easily measured, the effects of overcrowding on the visitor experience is more difficult to understand. Research shows that crowding, or the perception of crowding, is both an individual evaluation and a cultural conditioning not easily understood from the psychological perspective. A summary on crowding research in natural areas include the following:

- The perception of crowding is based on expectations or the lack of knowing what to expect.
- First-time visitors generally accept the current situation as normal and therefore are more tolerant to crowding.
- Those who do feel crowded tend to use one or more coping mechanisms:
  - Change their attitude or perception about crowding.
  - Change the time of day or season to visit.
  - Visit a less popular location in the same area.
  - Do not visit (this is the least-used coping mechanism).

The influence of culture on crowding norms appears to be related to crowding acceptability. Those in "contact cultures" or more socially oriented cultures, such as in Asian countries, were found to be more tolerant of crowds and even less likely to enjoy areas with very few people in it.

Research suggests crowding to be a personal evaluation based on culture, previous experience, expectations and an inward ability to accept and change as needed. If one

were to take a group of people experiencing the same thing at the same place and time, their evaluation of crowding would be as diverse as the people in the experience. Most importantly, it appears that crowding perception is site specific. Therefore, taking research results and applying them to other parks or outdoor areas may not work. Each site is as diverse as there are outdoor sites to visit and recreate in. Solutions then are site specific and visitor specific.

Solutions to Crowding

In areas such as the front country in parks or highly developed recreation sites, one researcher suggests that management of crowding should focus on "limiting rude, depreciative and dangerous behavior" rather than trying to preserve certain types of psychological experiences. It does appear that people who act in disorderly ways (e.g. littering, getting too close to wildlife, loud voices or other detrimental environmental impacts) bothered other visitors more than the number of visitors. This suggests some possible solutions: 1) More ranger "boots on the ground" for educational and control purposes; 2) a new way of educating visitors before entering the area, or 3) additional fines to visitors.

Researchers also recommend that sufficient space for the activities be pursued. In unique places, like Yellowstone and Glacier, it is not possible to increase the number of geysers or expand the Going-to-the-Sun Road. One cannot control where and when grizzly bears hang out by the roadway. Visitors are here to see that bear and get their wildlife photo. However, some solutions to sufficient space for activities such as wildlife watching would be to highlight areas outside the national parks that have equal wildlife opportunities, such as the National Bison Range, the multitude of wildlife refuges including the C.M. Russell Wildlife Refuge and various other hot spots within Montana. Such actions serve to disperse the visitors and reduce concentration in hot spots highly susceptible to crowding.

Since crowding is site- and visitor-specific, it seems logical that managers of parks and outdoor recreation areas be allowed to enact management techniques as they experience visitor behavior becoming unacceptable and environmental conditions deteriorating. These managers know their landscape and situation better than most and should be able to decide what is good for the land and what may work for most people. Surveying visitors about trade-offs is one way to get the management decisions started. Other possible ways to determine limits is to assess the capacity of the current infrastructure. If adding roads, campgrounds and visitor facilities is not part of the growth plan, then what the roads can handle structurally can be used as an indicator.

Additionally, safety measures due to emergency situations could provide a limiting number. For example, how quickly a park can evacuate all visitors in Glacier or Yellowstone when a wildfire explodes is influenced by the number of vehicles in the park. Knowing the acceptable evacuation time can help managers determine the maximum number of vehicles allowed for safety measures.

With current visitation trends over the past few years Glacier and Yellowstone managers are planning for uncertainty.

Technology is Remaking Montana Agriculture

How It's Affecting Montana Communities

By George W. Haynes
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Advances in agricultural technology are having profound impacts on Montana farms, ranches and rural communities. If 1950s technologies were still being used to grow wheat and raise cattle, wheat acreage would need to increase by more than 100 percent and cattle numbers would need to increase by over 50 percent to meet current levels of wheat and beef demand.

Production technologies have enabled labor to be utilized more efficiently. The number of farmers per 1,000 declined from 23 in 1950 to only 7 farmers in 2010. Over time a wide array of knowledge-based innovations have allowed producers to use land resources with increased efficiently. Technological advances in machinery, equipment efficiency, biotechnology and other areas have also enabled producers to substitute capital for labor. As a result, today many fewer proprietors are engaged in farming or ranching and many fewer workers are employed on Montana's farms and ranches.

Correspondingly, the significant decline in the numbers of agricultural producers has led to substantial declines in the numbers of people living in many of Montana's agricultural dependent communities. Since 1960, the 12 rural counties in the Golden Triangle, Montana's most productive agricultural area, have lost more than 15 percent of their population. Thus, the major changes in agricultural technologies that have taken place over the past 50 years have provided substantial benefits for many crop and livestock operations, but have also had substantial and complex impacts on Montana's rural communities.

Crop Technology

Genetically engineered (GE) seeds have been the most controversial development in new crop technologies. In Montana, the most important attribute of crops grown using GE seeds, such as alfalfa, corn for grain and sugar beets, is their resistance to the herbicide Roundup (or glyphosate). GE crops may also have other attributes, such as

disease and drought resistance, or contain nutritionally important vitamins and minerals. No commercially produced GE seeds are available for either of Montana largest crops, wheat and barley or for pulse crops (lentils and peas). These crops are largely used for human consumption and substantial amounts of wheat are exported to markets such as Japan, where consumer resistance to GE crops is substantial. The acreage dedicated to alfalfa and sugar beets has remained virtually unchanged over the past 10 years in Montana, although acreage dedicated to corn for grain has increased by over 60,000 acres.

While some GE crops are planted in Montana, the more significant impacts of GE crops have been in some neighboring states. For example, in North and South Dakota, GE corn and soybeans are now planted on extensive amounts of acreage previously dedicated to non-GE wheat and barley production. Since 2005, North and South Dakota have reduced their wheat and barley acreage by 9 percent (1.2 million acres) and increased their corn and soybean acreage by over 50 percent (1.5 million acres). In Montana, wheat and barley acreage has increased by 5 percent (less than 300,000 acres) and non-GE pulse acreage has increased by over 900,000 acres from less than 100,000 to over 1 million acres.

Other substantially less controversial technological advancements, such as precision agriculture and the introduction of air seeders, have increased the efficiency of farming. The two most important precision agriculture innovations have been GPS-based auto-steering for tractors, combines and swathers; and swath-control technology for sprayers. Auto-steering involves the use of GPS technology to steer the power source (i.e., tractor). Swath control technology enables farmers to more accurately control their applications of fertilizer or chemicals. Both technologies reduce overlap for seeding, fertilizing and applying herbicides from about two feet (on average) to near zero. While average cost savings are in the order of 30 percent or more with respect to the amount of seed, fertilizer, herbicides and pesticides applied, the technologies also have substantial positive soil quality impacts by reducing over-fertilization and chemical use. Returns on investment for these two technologies have exceeded 30 percent.

Currently, trials of variable rate technologies (VRT) are being implemented by selected farmers in Montana. VRT utilize extensive soil sampling, GPS mapping, drones, and yield and protein monitors to assist farmers in more precisely applying fertilizer and chemicals. Early results suggest that this technology increases yields and saves fuel, fertilizer, chemicals and labor.

Livestock (Beef Cattle) Technologies

Beef cattle producers have adopted multiple technologies, including antibiotics, implants, ionophores and beta-agonists to improve animal performance and well-being, and increase profitability. Low-dose antibiotics are utilized to increase the growth rate and improve feed efficiency. Estrogenic implants enhance nutrient use in feedlots. Ionophores are used in cattle to change the microbe population in their stomachs (or rumen), which increases the overall energy of the animal and improves their feed efficiency. Beta-agonists increase the lean muscle yield and decrease fat deposition in cattle. These and other technologies have increased the productivity of the U.S. beef herd by over 80 percent in the past 50 years. In addition, genomic sequencing of cattle can help the rancher determine if a calf has increased disease resistance, more efficiently processes feed and can produce offspring with more tender meat.

And finally, computerized technologies have enabled feedlot producers to more accurately determine the amount of feed consumed, antibiotics administered and determine the rate of gain. Ear tags utilizing radio frequency technologies have also brought just-in-time efficiency assessments to the feedlot operator, which translate into production gains and cost savings.

Adoption of Technology

When new technologies become available to farmers and ranchers, even where it is clear they are likely to increase the efficiency of the farm's operations, only the more innovative producers, who are also in a financial position to take some risk, tend to adopt them. The producers who do adopt those technologies then have lower variable costs than those who do not. Production efficiency becomes a critically important consideration when, as is currently the case, crop and livestock prices are relatively low. Low price environments place more severe financial pressure on less efficient producers and in those environments, the consolidation of farms and ranches is more likely to take place. However, even in high price environments, eventually operations that are more efficient are likely to take over the management of land operated by less efficient producers. This has been the pattern of U.S. and Montana agriculture since the 1940s.

Since 1960, the number of people working in agricultural occupations has declined by 40 percent or more in the 12 agricultural dependent counties in Montana's Golden Triangle of Montana. (Figure 1)

Several barriers to new technology adoption exist. A recent study of producers at MSU identified three major obstacles: 1) Confidence, 2) uncertainty and 3) big data. Producers are concerned that no one knows their farms better than them, hence they're not confident that an outsider (researcher) can tell them what's best for them. Producers are concerned about uncertainty facing them in the future and are unsure about the impact of new technology on future production needs. Producers are concerned about using big data. Many of these technologies, especially VRT and cattle scanning applications, require the ability to handle large data sets and many producers don't have the computer expertise to utilize the data.

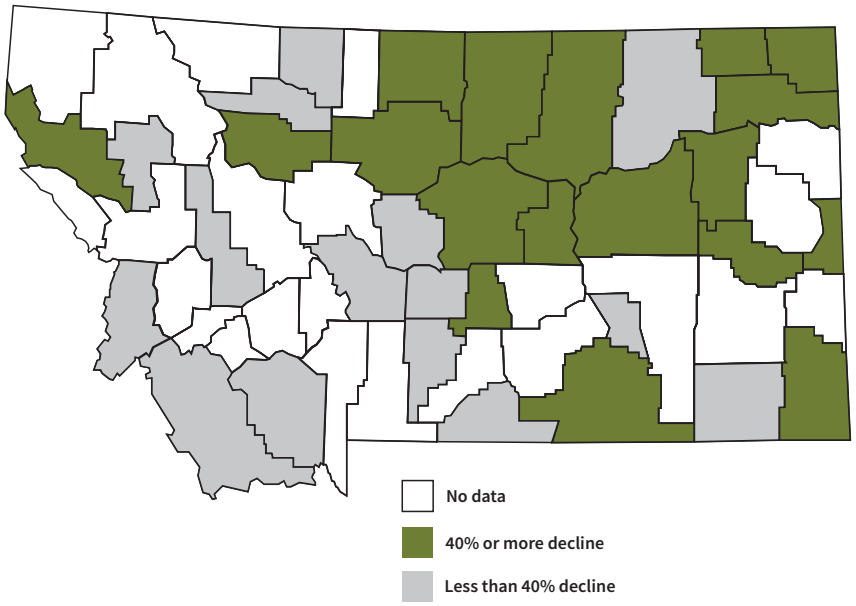
The adoption of technology by producers must also be accompanied by acceptance of the technology by consumers. Even though evidence suggests that technological advances have reduced malnutrition, consumers remain concerned about the food they

consume. A recent study suggests that less than 50 percent of consumers believe that the state of food and agriculture is improving.

Conclusion

Clearly, technological innovation is changing the face of agricultural and agriculturally dependent communities. At least some of the positive efficiency gains of capital for labor substitution and other producer level efficiencies are offset by the negative impacts of fewer agriculturally related manual labor opportunities and declining agriculturally dependent county populations. However, while fewer manual laborers are needed on the farm or ranch, there is a demand for technically competent workers to manage data and make crop and livestock production decisions based on this new information.

Figure 1. Percent Change in Employment in Agricultural Occupations, 1960-2014.



Source: U.S. Department of Agriculture , Montana State University Extension Service, Montana State University.

The High Wage Jobs Puzzle

Finding Montana's Place in the New Geography of Jobs

By Bryce Ward
Bureau of Business and Economic Research at the University of Montana

When evaluating a region's economy, the first question to ask is, "Do people want to live there?" If people want to live there, then something is working. If people do not want to live there, then something may be wrong.

By this metric, Montana is doing well because people want to live in Montana. In a recent Gallup poll, only 13 percent of Montanans indicated that they would move to another state if they could, the lowest percentage among all states. In contrast, almost half of the residents of New Jersey indicated that they would like to move to another state.

Migration data confirm Montana's desirability. About 5,200 more people move to Montana each year than move away, ranking Montana's net migration rate 13th among all states. Thus, by this simple measure, Montana's economy is performing well. However, if one digs deeper, there are some rumblings. While Montanans love Montana, they do have some concerns.

Every Place Has a Problem

While all places want to offer high wage jobs, a modest cost of living and an amazing quality of life, no place can offer all three. If a place did offer all three, it would attract lots of people – those people moving in would lower wages, increase the cost of living and possibly reduce the quality of life. As a result, every place has at least one problem.

In Montana, low earnings have been an issue. Median earnings for Montana workers over age 24 are $31,800. This is only 86 percent of the U.S. median ($36,900) and places Montana 45th among all states.

Some Montanans worry about the cost of living. While the cost of living in Montana is lower than the U.S. level, it is still high relative to income. Montana's cost of living is 94.5 percent of the U.S. level. Thus, for the median worker, less than half of Montana's earnings gap is offset by the state's lower cost of living.

These concerns are accentuated by the fact that Montana is becoming less affordable. While regional cost of living data only recently became available, we do have historical data on housing prices – the key driver of local cost of living. Since the early 1990s, housing prices in Montana, adjusted for inflation, have doubled, growing at the third fastest rate in the country trailing only Colorado and Oregon.

Income growth has not kept up with housing price growth. Median household income

in Montana only increased by 19 percent over this same period. As such, Montana has become much less affordable over the past 25 years.

Yet, in spite of these affordability challenges, Montanans still want to live in the state, which speaks to Montana's quality of life. There are a number of other places where Montanans could move that offer higher wages, a lower cost of living, or both. For instance, Michigan offers higher median earnings and a similar cost of living. Missouri offers similar wages and a lower cost of living, and Iowa offers both higher earnings and a lower cost of living. Yet, in spite of these opportunities, Montanans are not fleeing to these places.

For one group though, Montana's mix of jobs, costs and quality of life is not as appealing – those are young, college-educated workers. Between 2008 and 2012, on average, 564 more of these young, college-educated residents moved out of the state than moved in.

The outmigration of college-educated Montanans is a long-standing feature of the state's economy. Native-born Montanans (of all ages) who obtain a college degree are unlikely to still live in the state. Only 37 percent of Montana natives with a college degree still reside here. This is the ninth lowest percentage among all states and roughly half the level observed in states like Texas and California.

In-migrants from other states replace many of the native Montanans who leave, but not all. Montana has 20,000 fewer college graduate residents than college graduate natives. An additional 20,000 college graduates would move Montana's college-educated share from below average to above average and place it roughly equal to California and Oregon.

While some young Montanans may want to experience life outside the state or in an urban environment, limited job opportunities and low wages are likely driving this net outmigration. The median college-educated Montanan earns only 77 percent as much as the median college-educated American (82 percent adjusted for cost of living). In contrast, the median Montanan without a college degree earns 90 percent as much as the median American without a college degree (95 percent adjusted for cost of living).

Montana's inability to attract and retain more college graduates imposes costs on the state's economy. First, if Montana is not attractive to young, college-educated workers, it is not providing a full set of opportunities for its kids. Kids who grow up in Montana and go to college often feel they must leave the state to find opportunity and that is unfortunate.

Second, the outmigration of Montana's college educated has consequences for Montana families. As Montana families spread out across the country, they miss out on the benefits of proximity, such as bonding across generations. The loss of these benefits may spur follow-on outmigration – parents and siblings may leave to be closer to their out-of-state family.

Third, adding more college-educated workers would likely produce benefits for Montana's economy. Creative workers are an increasingly important source of a region's economic success. Economists find that regions with more skilled workers grow faster – they enjoy faster population, employment wage and housing price growth. More skilled workers increase the productivity of a region and increase its quality of life. Regions with more skilled workers also enjoy higher entrepreneurship rates and have proven more capable at recovering from inevitable downturns.

While no place is appealing to everyone, Montana's mix of offerings is somewhat unattractive for young college-educated workers, which may be a long-term problem for the state.

The New Geography of Jobs

When the railroad came to Butte in the 1880s, a flood of people followed. Montana had abundant natural resources and those resources were valuable in larger markets. The railroad allowed those resources to reach the market and the state's economy blossomed.

This is the typical regional economic story. Historically, economies sprouted where soil was fertile, timber and minerals were abundant, and where transportation by water was easy, such as at the confluence of rivers or at natural ports. Over time, man-made advantages like railroads or highways helped further shape local economic development. In recent years, the link between natural resources and local prosperity has weakened. Natural resources and access to markets still matter, but a region's success is increasingly tied to human creativity. Recent changes have allowed the knowledge economy to become a reliable driver of economic growth.

Figures 1 and 2 help illustrate some of these changes. Figure 1 shows how the allocation of workers has changed. It shows employment growth for four different types of occupations: creative, knowledge workers (doctors and computer programmers), low-skill service workers (janitors and home health aides), medium skill repetitive jobs (secretaries and bank tellers) and rules-based physical jobs (factory workers or truck drivers).

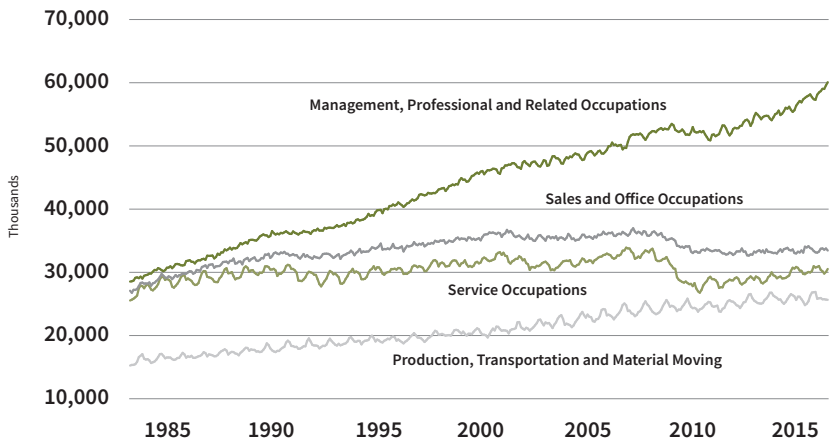
Over the past several decades, the non-routine occupations have grown, while the routine occupations have stagnated. Economists refer to the changes shown in Figure 1 as the polarization of the labor market. High- and low-skill occupations have grown, while middle-skill occupations have stagnated.

Figure 2 shows a similar pattern for earnings growth. The figure shows earnings growth between 1990 and 2014 across the earnings distribution. Adjusted for inflation, the earnings levels for approximately the bottom 75 percent of people declined or improved little, while earnings for the top 25 percent and particularly the top few percent, increased.

Changes that favor skilled workers also favor regions with skilled workers. While skilled workers have always been important for regional economic success, they matter more than they used to.

Natural resources still matter and will continue to matter in Montana. Indeed, in recent decades, Montana's wage growth, employment growth and population growth have been strong, particularly for less-educated workers and much of this strong performance can likely be traced to natural resource booms, like the Bakken oil formation.

Figure 1. Job Polarization: U.S. Employment by Occupation.



Source: Federal Reserve Bank of St. Louis.

However, Montana could benefit from a more robust knowledge economy. A more robust knowledge economy would provide higher wages – particularly for Montana's college-educated population. It would provide more robust opportunities for Montana's kids and a more diverse economy to help insulate the state from the booms and busts of its natural resource industries. It might also ensure that Montana does not become a playground for the wealthy.

To build a knowledge economy, knowledge industry firms need to be able to create goods and services in the state and deliver them to markets. Specifically, Montana needs entrepreneurs who can develop a company, assemble the workers and technology required to execute their vision and deliver their product to customers.

For the past several years, Montana has topped the Kauffman Foundation's rankings of start-up activity. Thus, Montana appears to have the necessary entrepreneurial spirit. However, the main impediment to more rapid growth in Montana's knowledge sector is the struggle to access the workers and capital required to succeed.

For instance, knowledge-industry firms in Montana may need programmers or developers, however, the state has relatively few workers in these areas. Montana employs only 7,850 people across all computer and mathematical occupations – that's 5,200 fewer workers to draw from than would be expected in a state Montana's size. This makes it more difficult for these types of firms to succeed in the state.

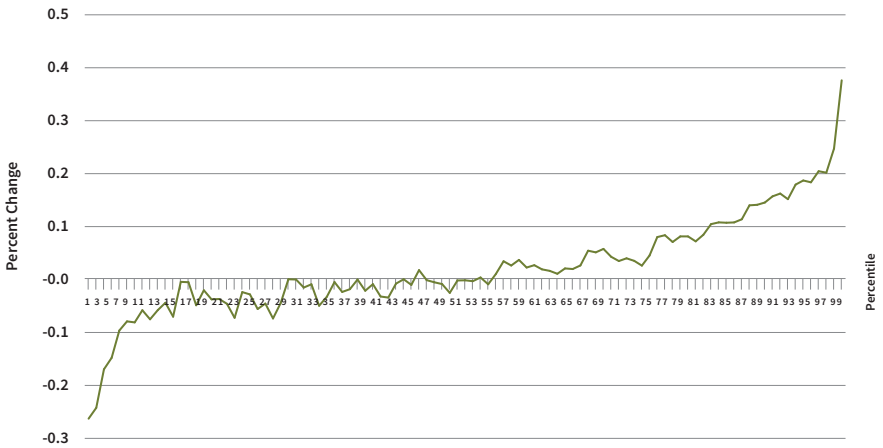
Breaking the Cycle

Montana faces two problems that reinforce each other. Low wages limit the set of college-educated workers available to Montana firms, but to raise wages for these workers, Montana needs to develop a more robust knowledge economy. Developing a more robust knowledge economy requires a pool of skilled, creative workers. If Montana can break this cycle, it is likely to succeed in creating a more robust knowledge economy.

But the knowledge economy is not tied to the innate characteristics of a particular place. It simply requires a collection of people and any place that proves desirable to knowledge workers and knowledge entrepreneurs can thrive in a knowledge economy. Thus, growing Montana's nascent knowledge economy does not rely entirely on who is already in Montana, it also depends on who might be willing to come to Montana and the set of people willing to come to Montana is large.

Many former Montanans yearn to return to the state, others find it attractive overall as Montana's quality of life is outstanding. Montana's cost of living is lower than many other places with large knowledge sectors and given a sufficient job, people can be better off here. Thus, Montana needs to do two things: it must attract or grow firms that can provide such jobs and it must also develop the resources that allow these firms to identify and attract potential residents. Montana's entrepreneurs are essential to this process and they must do two things: First, they need to have an idea that can support a

Figure 2. Percent Change in Earnings (Adjusted for Inflation), U.S.



Source: BBER analysis of 1990 Census and 2009-2014 American Community Survey Public-Use Micro Data.

successful business. And second, they must have the skills to successfully execute their idea in this environment.

This requires overcoming Montana's limitations. By empowering more entrepreneurs and learning from their experience, Montana is more likely to escape the unfortunate cycle described above. Montana's small but growing technology sector offers hope that this process is underway and gaining momentum. Overall, Montana is a desirable place to live and this suggests that its economy is working. However, Montana does face an important economic challenge – its knowledge sector is underdeveloped and as a result, it is somewhat unattractive to knowledge workers.

Developing a more robust knowledge economy would provide some benefits to Montana. The state would offer a wider range of opportunities to Montana kids and higher earnings, particularly for educated workers. It would also have a more diverse and resilient economy.

It should be noted, however, that developing a more robust knowledge economy may also impose costs. The cost of living may grow faster than income, particularly for some residents. As a result, Montana may become even less affordable. Also, the state's population may grow faster and this could affect quality of life. Both of these changes may make Montana less appealing to different groups.

These are the current tensions that underlie Montana's economy. Montanans must work to better understand these trade-offs and decide how we want to balance them. However, as we make these choices we must keep in mind that we have limited control. Economic forces outside of Montanans control will also play a big role in determining the extent to which Montana develops a knowledge economy, as will the associated costs and benefits.

Four Decades of Economic Analysis

How Has BBER Done?

By Paul E. Polzin
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"And now let's turn to the basic industries to explain the underlying economic trends in the economy." Chances are that if you attended a Montana Economic Outlook Seminar or another Bureau of Business and Economic Research (BBER) presentation sometime in the past 40 years, you heard this statement or something very near to it. The basic industries represent the analytical tool most used by BBER researchers to understand and forecast state and local economic trends.

But things have changed in the past four decades. The Anaconda Company no longer exists, the health care industry is now the largest single industry in our major communities and service sector industries have been the fastest growing components of state and local economies. Is the economic concept that worked so well in the past still relevant to analyzing Montana's economy today?

This article uses recent data to re-examine BBER's traditional method of using the basic industries to explain the long-term trends in the state and local economies. Using data, which was not available at the time the method was developed in the mid- to late-1970s, provides powerful verification of the approach. Specifically, we will examine how accurately the changes in the basic industries at the state and local levels explain the changes in the non-basic industries. The phrase "long-term" is important. BBER monitors and evaluates the accuracy of its short-term forecasts each year and the findings are published in the Montana Economic Report.

Concept of Basic and Non-Basic Industries

The term "basic industries" can be defined in a variety of ways. At one level, basic industries are those local businesses that produce products that are exported and sold elsewhere and in the process inject new money into the local economy, money which is spent and re-spent. To these industries are usually added activities, such as interstate transportation (railroads) and the federal government, which also inject new money into the economy via the spending of employees, but do not involve the physical export of goods.

From a mathematical perspective, the basic industries may be viewed as the exogenous or "outside" factors operating in a local economy. Exogenous factors are influenced by events and trends from outside the region under study. In other words, the basic industries are impacted by national and worldwide events. Changes in the basic industries are one conduit which introduce the exogenous factors into a local economy. The rest of the regional economy then reacts to these impulses injected by the basic industries.

The economic literature uses a number of terms to denote the group of industries not on the basic list. Among them are the "non-traded industries," "derivative industries" and the "non-basic industries." The rest of the economy is denoted here using the neutral term "non-basic industries." A phrase such as "derivative industries" may be interpreted as inferior or not as important as the basic industries. This is certainly not the case. "Non-basic" simply includes all the industries not included in "basic." They may also be thought of as the endogenous industries, that is, non-basic industries react to changes in the basic industries.

Changes in the basic industries are not the only things to influence non-basic industries. Things like the Affordable Care Act and the growth of Internet shopping will impact the local health care and retail trade industries. In addition, shorter-term factors, such as changes in interest rates, may impact construction activity and establishments may expand or contract based on internal management decisions rather than local economic conditions.

The non-basic sector is usually larger, sometimes much larger, than the basic sector.

Table 1. Basic and Non-Basic Industries, Montana and Communities.

Industry	Montana	Communities
Farm	Basic	Basic
Forestry, Fishing and Other	Basic	Basic
Mining	Basic	Basic
Utilities	Non-Basic	Non-Basic
Construction	Non-Basic	Non-Basic
Manufacturing	Basic	Basic
Wholesale Trade	Non-Basic	Allocated if trade center, otherwise Non-Basic
Retail Trade	Non-Basic	Allocated if trade center, otherwise Non-Basic
Railroads and Trucking	Basic	Basic
Information	Non-Basic	Non-Basic
Finance and Insurance	Non-Basic	Allocated if trade center, otherwise Non-Basic
Real Estate and Rental and Leasing	Non-Basic	Non-Basic, allocated in Flathead and Gallatin
Professional and Technical Services	Non-Basic	Allocated if trade center, otherwise Non-Basic
Management of Companies	Non-Basic	Allocated if trade center, otherwise Non-Basic
Administrative and Waste Services	Non-Basic	Non-Basic
Educational Services	Non-Basic	Non-Basic, except in private college communities
Health Care and Social Assistance	Non-Basic	Allocated if medical center, otherwise Non-Basic
Arts, Entertainment and Recreation	Non-Basic	Non-Basic
Accommodation	Basic	Basic
Food Services	Non-Basic	Non-Basic, allocated in tourist centers
Other Services	Non-Basic	Non-Basic
Federal Gov't Civilian	Basic	Basic
Military	Basic	Basic
State Gov't	Non-Basic	Basic
Local Gov't	Non-Basic	Non-Basic

Source: U.S. Bureau of Economic Analysis.

Statewide non-basic industries are roughly 3.5 times larger than the basic industries. This means the earnings in non-basic industries are more than three times larger than in the nonfarm basic industries. Among Montana communities the ratio of non-basic to nonfarm basic earnings varies from approximately 1.7 in Missoula to 4.4 in Flathead County. There are many reasons for this ratio to vary, but they appear unrelated to the underlying BBER approach, which says that changes in the basic sector will lead to changes in the non-basic sector.

Quantifying Basic and Non-Basic Industries

Basic and non-basic industries and the relationship between them are easy to describe conceptually, but are far more difficult to quantify using standard data sources. Federal government economic data for states and localities use the North American Industry Classification System (NAICS). Although these industry codes are well established and detailed, a number of industries consist of both basic and non-basic activities. Therefore, certain industries must be bifurcated into basic and non-basic components.

At the state level, the NAICS industry codes may be quickly classified into basic and non-basic sectors. As shown in Table 1, each of the major NAICS industry codes may be placed entirely into either basic or non-basic categories.

For Montana communities, the basic sector includes those statewide basic industries located in the county. In addition, most cities are regional trade and service centers. Residents of nearby rural areas visit the communities to shop, see a doctor or dentist and conduct other business. Therefore, portions these industries that are classified non-basic at the statewide level are bifurcated into basic and non-basic in individual communities. Estimates of the portion of each non-basic trade center industry that may be attributed to nonresidents is derived for each community and used to divide that industry into basic and non-basic components. The bifurcating factor is based on the relative importance of the industry in a city compared to the statewide average.

State government is a unique industry. It is classified as a non-basic industry for Montana because there workers are mostly paid from taxes collected from within the state and do not represent a net injection into the economy. For counties, however, state government is classified as a basic industry because these workers are paid from taxes and other fees collected outside the community and do represent a net inject of new dollars.

Is the BBER Approach Still Valid?

A graphical and nontechnical approach is used to explore whether or not long-term changes in the non-basic industries still are explained by changes in the basic industries. Graphs present information in an intuitive and non-technical manner without the need for complicated statistical formulae and tests.

The definitions of the basic and non-basic sectors in Montana and the urban areas correspond exactly to those presented in the Montana Economic Outlook Seminars. As in the seminars, earnings of workers are used as measures of activity in the basic and non-basic sectors. Research has concluded that earnings are a better measure than employment or other indicators. Finally, although agriculture is definitely a basic

activity, nonfarm earnings are used to measure basic activity. Farm earnings depend on agricultural prices and are very volatile from one year to the next and this volatility may mask other important trends.

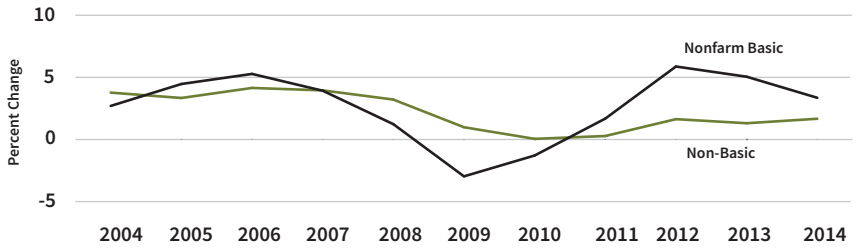
Graphs are presented for Montana and representative seminar communities. Two sets of graphs are presented. Figures 1-3 presents the percent change in nonfarm basic earnings and the percent change in non-basic earnings during the past decade and a half. Both have been adjusted for inflation. Three-year moving averages for the period 2004 to 2014 are presented because there are many little ups and downs in both data series that may mask underlying trends – statisticians sometimes refer to these as "noise." A moving average is a statistical method to "smooth" the data. Figure 4 is a scatter diagram of the percent change in nonfarm basic earnings compared to the percent change in non-basic earnings. These graphs provide a visual picture of the correlation between them.

The Statewide Economy

The percent changes in nonfarm basic and non-basic earnings for Montana are pictured in Figure 1. Even though the percent changes for the two sectors are of the same orders of magnitude, the non-basic sector is more than three times larger than the nonfarm basic sector.

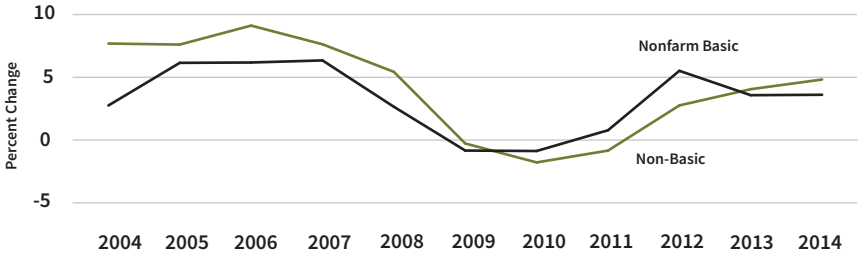
The trends in the non-basic sector follow those of the nonfarm basic industries. There is the resource fueled rapid growth in the early 2000s, the descent into the Great Recession in 2007-09 and then the recovery after 2010. The trend in nonfarm basic earnings appears to be more volatile than in the non-basic industries, with greater declines during the recession and faster growth in the recovery. Changes in the trend in nonfarm basic are coincident or precede those in non-basic, which is consistent with a train of causation going from nonfarm basic to non-basic.

Figure 1. Percent Change in Nonfarm Basic and Non-Basic Earnings, Montana.



Source: U.S. Bureau of Economic Analysis, Bureau of Business and Economic Research, University of Montana.

Figure 2. Percent Change in Nonfarm Basic and Non-Basic Earnings, Gallatin County.



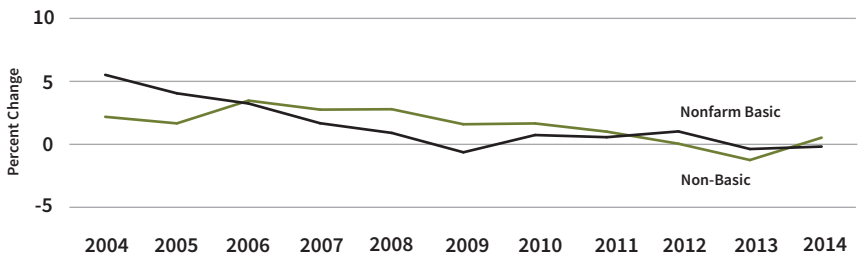
Source: U.S. Bureau of Economic Analysis, Bureau of Business and Economic Research, University of Montana.

Sub-State Economies

In the interest of brevity, the trends in nonfarm basic and non-basic earnings are presented for only two of Montana's major urban areas. Gallatin County is representative of areas that were significantly impacted by the Great Recession. Flathead, Missoula and Yellowstone counties would also fall into this category. Cascade County represents those areas relatively unaffected by this recession. Similar places would be Lewis and Clark County and, to a certain extent, the Butte-Anaconda area.

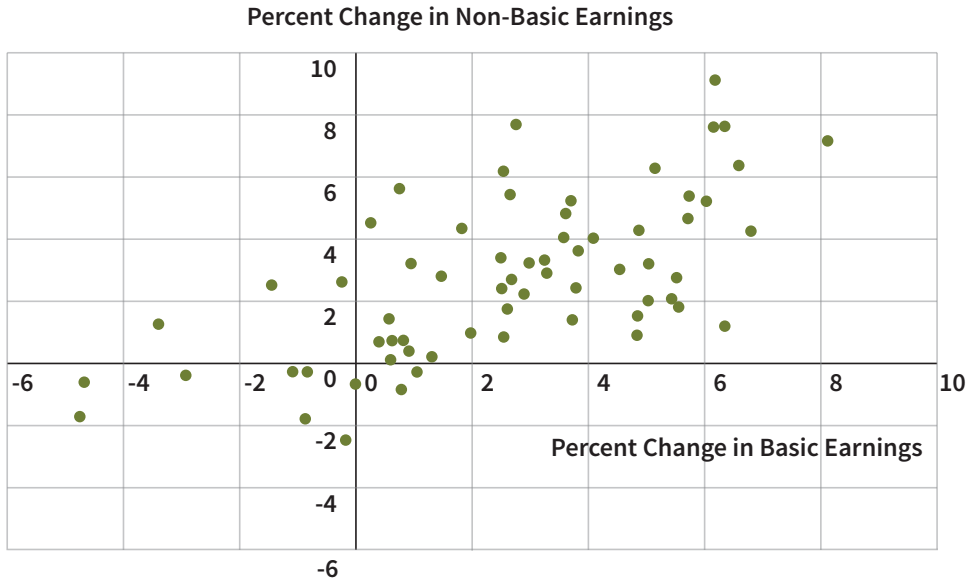
The trends in the three-year averages for nonfarm basic and non-basic earnings in Gallatin County are shown in Figure 2. The cyclic profile of declines in 2008-10 and then increases in 2011 and 2012 are clearly seen in both series. Nonfarm basic clearly leads non-basic, which is consistent with BBER's approach that changes in the basic sector lead to changes elsewhere in the economy.

Figure 3. Percent Change in Nonfarm Basic and Non-Basic Earnings, Cascade County.



Source: U.S. Bureau of Economic Analysis, Bureau of Business and Economic Research, University of Montana.

Figure 4. Percent Change in Non-Basic vs. Percent Change in Basic Earnings, Seven Montana Counties.



Source: U.S. Bureau of Economic Analysis, Bureau of Business and Economic Research, University of Montana.

The trends for Cascade County are presented in Figure 3. There is a small cyclic pattern in non-basic with a minor trough in 2009. There is no obvious recession profile in nonfarm basic. The overall trend is one of decelerating growth in both nonfarm basic and non-basic.

A scatter diagram combining all seven major urban areas in the state is presented in Figure 4. There is a strong clustering in the northeast and southwest quadrants, indicating that positive changes in nonfarm basic are associated with positive changes on non-basic and correspondingly negatives are associated with negatives. Of the 77 data points plotted in the graph, only five are not in the northeast or southwest quadrants. All five are concentrated near the origin, signifying that a slightly negative value for one variable is associated with a slightly positive value for the other. This high correlation between nonfarm basic and non-basic for Montana communities further confirms that BBER's analytical method continues to be valid.

Conclusion

BBER's long-term regional economic analysis method was developed in the 1970s and 1980s. This article used the latest data to determine if the method is still valid today. Rigorous validation studies incorporate data that was not available when the when the method was first devised. The overall conclusion is that the historic method still is appropriate for analyzing state and local economies in Montana.

The essential feature of the BBER approach is that changes in the nonfarm basic industries will lead to predictable changes in the rest of the economy (e.g. the non-basic industries). There are close relationships between the percent changes in nonfarm basic earnings and the changes non-basic earnings during the 2004 to 2014 period. These relationships were found for the statewide data and for seven of Montana's largest urban areas. In addition, scatter diagrams for both the statewide and community data document the strong correlation between the changes in nonfarm basic and changes in non-basic sectors.

ASSESSING MONTANA'S KEY INDUSTRIES

Farming and Ranching

Low Prices Hit Home

By George W. Haynes and Kate Fuller
Department of Economics and Agricultural Economics and Extension Economics at Montana State University

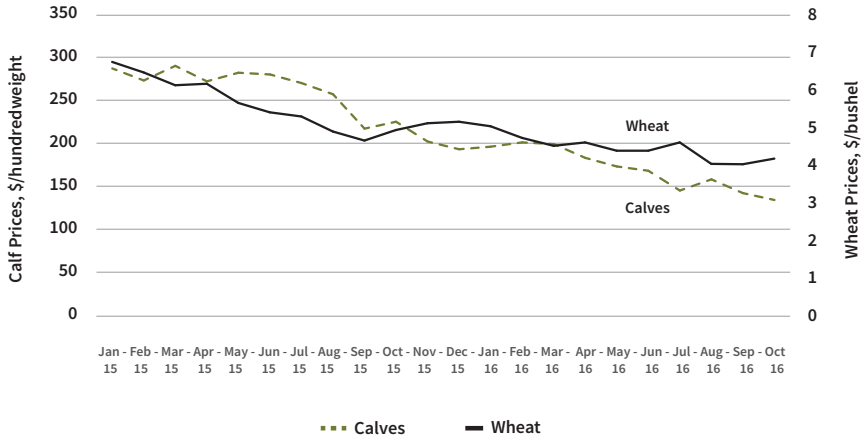
Montana farmers and ranchers experienced a challenging year in 2016 with lower grain and cattle prices and concerns about lower prices in 2017. Since January 2015, Montana wheat and calf prices have declined by 38 percent and 53 percent, respectively. Price forecasts for the next five years suggest steady to slightly higher prices in the wheat and barley markets and slightly lower prices in the cattle market.

With the rapid increase in acreage planted to lentils and dry peas, prices on these two products have become important to many producers. Lentil prices have been volatile, moving from nearly $0.45 per pound in May to less than $0.30 per pound in October. Pea prices have been less volatile and are selling around $0.13 per pound. Price forecasts for both lentils and peas are somewhat optimistic for next year. Neither of these products are traded in the commodity markets, hence producers depend on forward contracting or elevator prices at harvest to market them.

Crop Production

Favorable weather this summer resulted in above average yields for many wheat, barley and hay producers throughout most of Montana. Total production of winter wheat increased by 16 percent, even though slightly fewer acres were planted. Total production of spring wheat decreased by 4 percent because of a substantial decline in the number of acres planted (from 2.54 million acres in 2015 to 2.11 million acres in 2016). Total

Figure 1. Wheat and Calf Prices for January 2015 through October 2016.



Source: National Agricultural Statistics Service.

production of barley increased by 5 percent, even though fewer acres were planted. And finally, alfalfa hay production remained virtually unchanged, while other hay production increased by over 33 percent because of ample rainfall throughout much of the state.

Even though wheat, barley and hay have been the most stable crops in Montana for several decades, a remarkable story has been the emergence of pulse crops (most importantly lentils and dry edible peas). Pulse crop acreage eclipsed 1 million acres in 2016. Lentil acreage increased from 293,000 acres to 515,000 acres, a 75 percent increase, with total production increasing by more than 195 percent from last year. Dry edible pea acreage increased from 552,000 acres to 585,000 acres, a 6 percent increase, with total production increasing by more than 39 percent from last year. For many producers, the replacement of fallow with pulse crops in their rotation has proven profitable.

Livestock (Cattle) Production

U.S. beef production increased by nearly 6 percent in 2016, an outcome consistent with an early expansion stage for the national beef herd in the cattle cycle. U.S. beef production forecasts suggest that production will increase by over 4 percent in 2017 putting additional pressure on declining cattle prices. U.S. beef exports are expected to increase by over 5 percent in 2017, while U.S. beef imports are expected to decrease by more than 10 percent. Montana ranchers are largely cow-calf producers, who market about 1.5 million calves each year.

Farm Financial Conditions

The farm and ranch sector has experienced several excellent financial years through 2014. However, net farm income declined by nearly 14 percent from 2014 to 2015 and is expected to decline another 14 percent in this year. Lower commodity prices have been accompanied by somewhat lower production costs, especially fuel costs, which are expected to keep net farm income unchanged from 2016. Declining land prices and lower profits are expected to lower farm equity by less than 2 percent this year. The average farm balance sheet remains very healthy with a debt to asset ratio of less the 15 percent.

Forest Products

Market and Supply Challenges Continue

By Todd A. Morgan, Steven W. Hayes and Chelsea P. McIver
Bureau of Business and Economic Research at the University of Montana

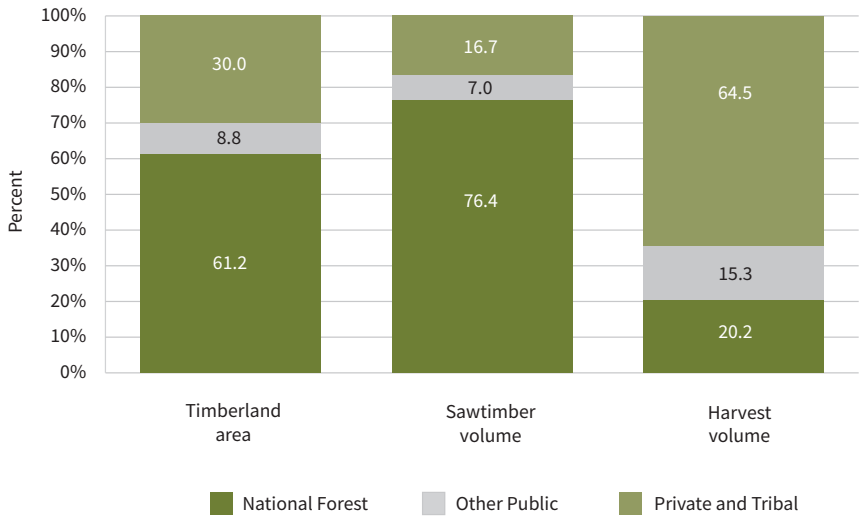
Despite having more than 19 million acres of timberland and 100 (mostly small) wood products facilities, times remain tough for forestry and wood products workers in the Treasure State. Forest industry employment was estimated to have dropped to about 7,300 during 2016, personal income was estimated to have fallen to around $307 million and primary wood product sales appear to have dropped below $560 million.

After acquiring Plum Creek in early 2016, Weyerhaeuser, the largest private timberland owner in Montana and in the U.S., closed two of the state's larger mills and an administrative office in Columbia Falls, putting about 170 employees out of work by year's end. Industry watchers wonder when the "other shoe" will drop. Organized as a real estate investment trust, Weyerhaeuser's assets and revenue come from real estate transactions and timber management, as well as wood products manufacturing. It is not certain if the state's three remaining Weyerhaeuser facilities will be closed or sold, when more Montana timberland will be sold or who the potential buyers would be.

The major forces impacting Montana's forest industry include a combination of related national and international market factors – new home construction in the U.S., unfavorable currency exchange rates, the expired softwood lumber agreement (SLA) between the U.S. and Canada – and longer-term timber supply issues here in Montana.

New home construction is the leading use of lumber and the number of new homes in the U.S. has been growing slowly since the Great Recession ended. Fewer than 1.2 million

Figure 1. Characteristics of Montana Timberland by Ownership Class.



Source: Forest Service, Forest Inventory and Analysis Program, BBER Forest Industry Research Program.

new homes were built in 2016, still below the 40-year average of 1.4 million. With a strong U.S. dollar, weaker wood demand from China and no SLA in effect, Canadian imports are increasing, keeping a lid on lumber prices while growing as a share of total U.S. lumber consumption. These market conditions have made it challenging for domestic wood products firms and are expected to continue through 2017 or until a trade case disrupts Canadian lumber shipments to the U.S.

Limited timber availability continues to make it difficult for wood products firms in Montana to get the timber they need, regardless of market conditions. Less than 17 percent of timber volume and 30 percent of timberland in Montana are privately owned (Figure 1, page 25) and about 45 percent of that timberland is in younger age classes, not ready for harvest. Over 60 percent of timberland and 75 percent of timber volume are under national forest management, but the Forest Service provides only about 20 percent of timber harvest in the state. The state of Montana manages almost 5 percent of timberland and supplies around 14 percent of the annual harvest.

Timber availability from national forests and other federal lands is restricted because of contentious budgetary, legal and political issues. However, the Republican-controlled Congress and White House could shift national policies and pass legislation to favor more timber harvesting from federal lands, while allowing the Forest Service to use more of its budget for management activities instead of firefighting. And Gov. Steve Bullock's "Forests in Focus" initiative to deal with beetle-killed trees and threats from wildfire is creating opportunities across all ownerships for increased industry activity in Montana, capitalizing on provisions in the 2014 Farm Bill.

With all the major timber-using mills in Montana operating well below capacity, the closure of the two Weyerhaeuser mills could help ease the constrained timber situation somewhat. However, more closures or curtailments are certainly possible. Significant improvements in market conditions and/or increased timber availability could stem further declines in Montana's forest industry, benefiting forest landowners, loggers, mill workers and communities.

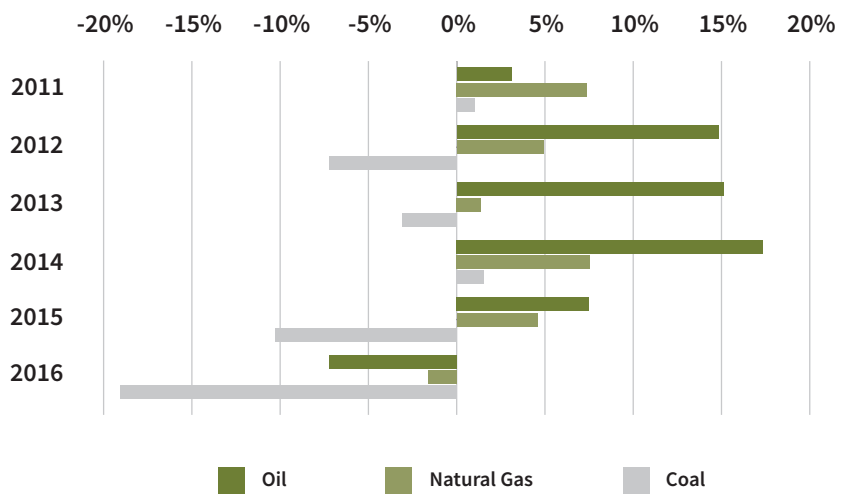
Oil, Natural Gas and Coal

Production Declines Set In

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

The U.S. fossil fuel industry is poised for reduced production and lower prices in 2017. Based on preliminary data from the Energy Information Administration (EIA), production amounts for oil, natural gas and coal are all expected to decline from those observed in 2016. Prices for these commodities are also expected to decline, but at a slower rate than observed from 2014 to 2015. Oil and natural gas prices declined by over 40 percent from 2014 to 2015, while coal declined at a more modest rate of 6 percent. As shown in Figure 1, total U.S. coal production is expected to decline by 19.1 percent from 2015 to 2016, almost double the 10.3 percent decline observed from 2014 to 2015.

Figure 1. Fossil Fuel Production Trends, Year Over Year Percent Change.



Source: Energy Information Administration, Short-Term Energy Outlook.

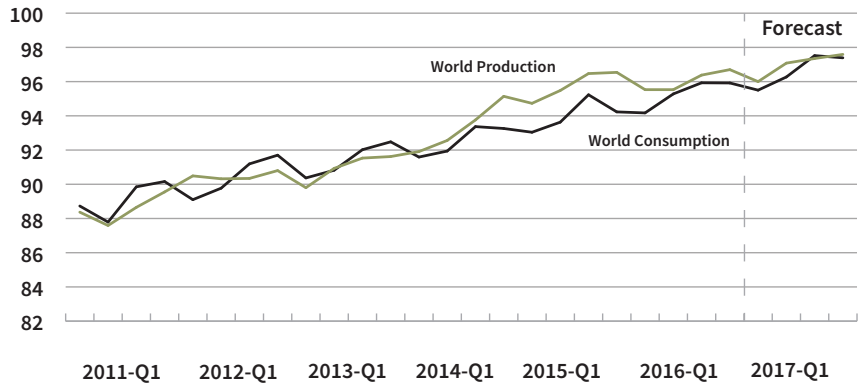
What is causing the rapid decline in production activity? There is no simple explanation applicable to all commodities. The following discussion explains the major cause of the reduced production for each commodity.

Oil

The U.S. is the No. 1 producer of oil in the world. Because of new technological developments, such as horizontal drilling and hydraulic fracking, U.S. production in 2015 reached its highest level since 1970. While U.S. production is expected to decline in 2016, other producers like OPEC countries are expected to increase production by about 2.3 percent.

As shown in Figure 2, world production is expected to exceed world consumption until late 2017. In addition, U.S. inventories have exceeded the historical four year monthly high/low range since January 2015. Until consumption increases and/or world

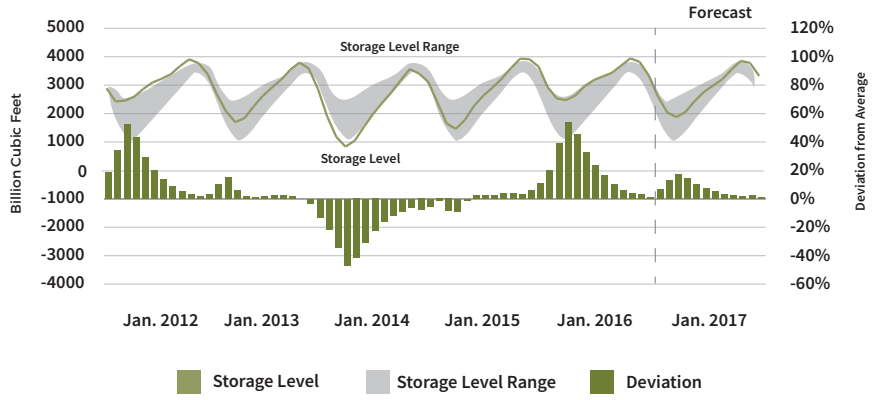
Figure 2. World Liquid Fuels Production Consumption and Balance, Million Barrels Per Day.



Source: Energy Information Administration, Short-Term Energy Outlook, October 2016.

production declines, U.S. oil production will be stable at best. According to EIA's October short-term outlook, U.S. production is expected to decline further in 2017 with West Texas Intermediate prices in the range of $47 to $55 per barrel.

Figure 3. U.S. Working Natural Gas in Storage, Billion Cubic Feet.



Source: Energy Information Administration, Short-Term Energy Outlook. Note: Colored Band Around Storage Levels Represents the Range Between the Minimum and Maximum from Jan. 2011 - Dec. 2015.

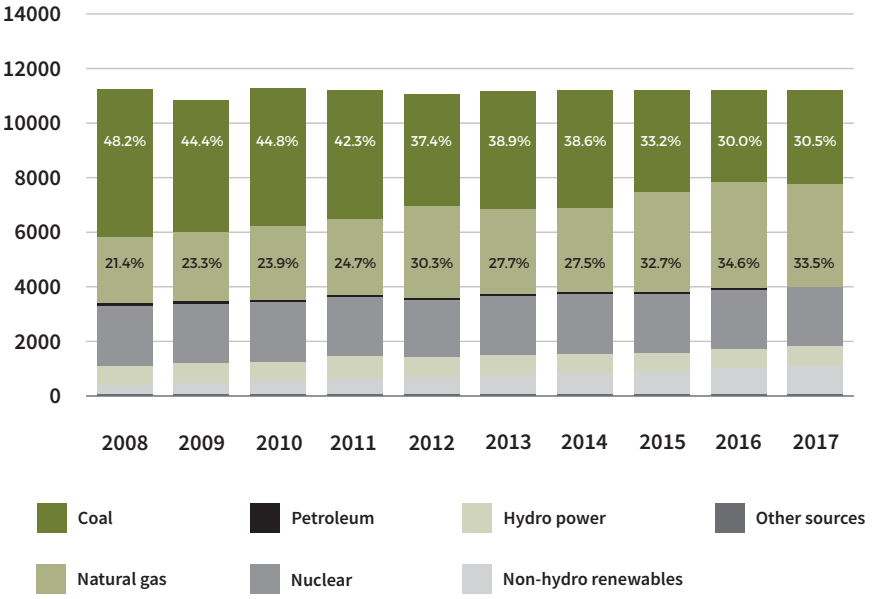
Natural Gas

The U.S. natural gas industry has also benefited from new technology. A good example is the Marcellus formation in Pennsylvania. Production from this formation has increased by 840 percent from 2010 to 2015 due to horizontal drilling and hydraulic fracking technologies. Similar to oil stocks, there is a surplus of natural gas on the market. Figure 3 shows the natural gas in storage compare to the minimum and maximum observed from 2010 to 2015. By 2017, more natural gas is expected to be used for electricity generation, which will reduce the market surplus back to historic patterns. With reduced inventories, production and prices are expected to increase in 2017.

Coal

U.S. coal is primarily used for power generation. Preliminary EIA data shows that 92.5 percent of all coal produced in the U.S. is used to produce electricity. However, due to federal regulations governing coal-fired power plant emission standards, more natural

Figure 4. U.S. Electricity Generation by Fuel, All Sectors, Thousand Megawatt Hours Per Day.



Source: Energy Information Administration, Short-Term Energy Outlook, October 2016. Note: Labels Show Percentage Share of Total Generation Provided by Coal and Natural Gas.

gas is being used to produce electricity. As shown in Figure 4, 34.6 percent of power generation will come from natural gas in 2016, whereas coal use is expected to decline to 30 percent. In addition to the shift from coal to natural gas, U.S. coal exports declined by 26.2 percent from 2015 to 2016. Delivered coal prices to power generating facilities are expected to remain flat into 2017.

Manufacturing

New Firms Stimulate Growth

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

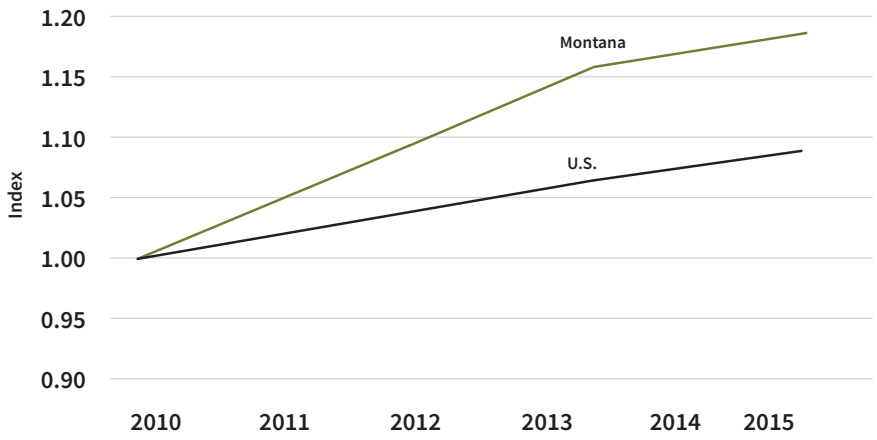
Montana manufacturing has consistently outperformed U.S. manufacturing since the recovery from the Great Recession began in 2010. As pictured in Figure 1, the difference between the state and the nation was particularly pronounced in 2010, 2011 and 2012 when Montana manufacturing employment grew at 4 to 5 percent annual rates while the U.S. was posting employment increases in the 2 to 3 percent range. The Montana employment growth rates decelerated in 2014 and 2015, but still remained above the national average. The state's rapid growth was due to a variety of manufacturing industries including fabricated metal products, beverages and computers/electronics. Even wood products grew as construction slowly increased nationwide.

A distinguishing feature of the recent rapid growth in Montana manufacturing is that much of it was associated with the opening of new establishments rather than growth of existing factories. Fabricated metal products and beverage manufacturing were the two largest contributors to the 2010-15 employment increase in manufacturing. Fabricated metal products include a wide variety of products from prefabricated metal buildings to hunting knives. Beverage manufacturing includes the new trend in distilleries, wineries and breweries.

Table 1 reports the number of manufacturing establishments in fabricated metal products and selected components of beverage manufacturing, as well as the totals for all manufacturing. The number of fabricated metal products establishment rose from 178 in 2010 to 231 in 2015, an increase of 53 establishments. The establishment growth in just this industry accounted for about 43 percent of the 124 establishment increase in all of manufacturing. Adding the establishment increases in distilleries, wineries and breweries to that of fabricated metal products leads to a total of 100 new businesses in just these categories, or almost 81 percent of the growth in all of manufacturing.

Manufacturing currently employs about 23,000 to 24,000 full and part-time workers. Measured in terms of workers earnings, which give more weight to higher paying jobs,

Figure 1. Manufacturing Employment, Montana and U.S., 2010 to 2015. (2010 = 1.0)



Source: U.S. Bureau of Economic Analysis.

manufacturing accounts for roughly 16 percent of Montana's economic base. Among nonfarm basic industries, manufacturing ranks third behind the federal government and mining.

Despite more than a decade of permanent plant closures due to the declining availability of saw timber, the wood products industry is still the largest manufacturing industry measured by employment. The fabricated metal products industry is the second largest. The oil refining industry, located primarily in Billings and Great Falls, "punches above its

Table 1. Number of Establishments, Selected Manufacturing Industries, Montana.

Industry	2010	2015	Change
Manufacturing	1,312	1,436	124
Fabricated Metals Products	178	231	53
Beverage Manufacturing			
Distilleries	0	11	11
Wineries	3	8	5
Breweries	22	53	31

Source: Bureau of Labor Statistics, QCEW.

weight" in terms of economic importance because of the very high average wages paid to employees. It employs roughly 1,200 workers, about the size of the beverage industry, but total wages are the largest of all manufacturing industries.

Preliminary data suggest a 2016 employment growth of just less than 2 percent, which would put it in line with the past two years, and below the torrid performance of 2010 to 2012. World economic conditions and further declines in exports are the biggest risk to Montana manufacturing. As noted elsewhere in this report, Montana manufacturing exports have declined in recent years, but exports are relatively less important here than nationwide. Nevertheless, some of the largest manufacturers in the state are also most dependent on exports. Sizable declines or even the possibility of shutdowns due to the loss of export markets could pose a significant overall risk.

Travel, Tourism and Recreation

What's Over the Horizon?

By Norma P. Nickerson
Institute for Travel and Recreational Research at the University of Montana

The growth in Montana's travel and tourism continues at a slow, predictable rate. Data from 2016 will likely show a stable, but good year for Montana's nonresident travel industry. According to 281 Montana tourism business owners surveyed in October by the Institute for Tourism and Recreation Research, 57 percent of businesses experienced an increase in visits over 2015, while 20 percent saw a decrease. These are nearly identical changes reported in 2015. Preliminary nonresident visitor numbers indicate a 2 percent increase in 2016, on par with preliminary numbers nationwide. According to the U.S. Travel Association, projections for 2017 suggest a steady 2 percent increase over 2016.

Steady, however, is not a word the two large national parks and surrounding communities may use to describe the past two years. In 2015, Yellowstone witnessed a 17 percent increase in visitors, followed by another 4 percent in 2016. Similarly, Glacier saw a 1 percent increase in 2015 (even with fires) and then another 20 percent in 2016. Either the "Find Your Park" National Park Service centennial campaign is one of the best marketing efforts in recent history or something else is going on.

In a glimpse, here are some of Montana's preliminary 2016 travel and recreation industry numbers:

- Skier visits were up 4 percent over the 2014-15 season (better snow).
- Airport deboardings are preliminarily up 4 percent in 2016 (more seats).
- Bed tax revenue was up 5 percent for the first half of 2016 (higher average daily rates).
- Amtrak ridership in Montana shows a preliminary increase of 4 percent.

Indicators of the Future of Travel and Tourism

Staying closer to home? In the short term travel window, a U.S. Travel Association survey found that eight in 10 U.S. residents expressed interest in traveling domestically in the coming months, but are increasingly more likely to stay closer to home.

Millennial travel stats? Once again, millennials are showing differences from baby boomers. According to FlexJobs.com, 70 percent of millennial respondents said their desire to travel was a primary reason to work compared to only 47 percent of baby boomers.

International Travel? 2016 saw 14 percent fewer Canadians traveling to the U.S., largely due to our strong dollar, which is likely to continue. U.S. officials and the travel industry have been successful with their strategy to connect U.S. tour providers with the right Chinese travelers as seen by Chinese visitor increases to the U.S. There are plans for the U.S. to do a similar partnership with India. The U.S. Department of Commerce projects tourism from India will increase by 47 percent from 2014 to 2020, reaching 1,414,000 visitors in 2020.

Disruptor 50? In CNBC's list of 50 businesses to watch, ranked for their ability to disrupt established industries and public companies, Uber and Airbnb were the top two. Uber, the ride-share business, has expanded to over 440 cities in 60 countries since its founding in 2010. Airbnb, the home-sharing company, is in 34,000 cities in 191 countries and has booked over 80 million nights so far. ChargePoint, a network of electric vehicle charging stations, is in more than 17,000 locations on four continents with the belief that the electric vehicle is the future.

Health Care

More Changes and Uncertainty

By Bryce Ward
Bureau of Business and Economic Research at the University of Montana

Health care continues to experience significant changes and face substantial uncertainty. Recent data show surges in health insurance coverage, health care employment and health insurance premiums.

One of the more significant changes in health care in Montana in 2016 was the implementation of the HELP Act (or Medicaid expansion). As of July, nearly 50,000 people had enrolled. According to data published in The New York Times, this has helped push Montana's uninsured rate to 8.7 percent – less than half of what it was prior to the Affordable Care Act's (ACA) implementation. In addition to helping improve the financial and physical health of those insured, Medicaid expansion has been shown to improve hospital financial health. A recent study found that Medicaid expansion has reduced uncompensated care, increased Medicaid revenue and improved margins.

The year 2016 also saw a surge in health care employment. After a couple of years of relatively slow employment growth (<1 percent in 2015), preliminary data from early 2016 suggest that health care employment in Montana grew by more than 3 percent. Most of this growth occurred in ambulatory health services (i.e., doctor's offices) and hospitals. Each of these subsectors experienced employment growth of more than 4 percent.

Health insurance premiums have also been rising. Between 2011 and 2014, premiums for private-sector workers with employer-sponsored health insurance grew slowly (1-2 percent per year). However in 2015, premiums surged, at least for some plans. They grew by 1 percent for people with individual plans, but by 11 percent and 15 percent for people with employee plus one or family plans. This means that health insurance premiums for private sector workers in Montana are now roughly equal to the national average for all plan types. In recent years, family plans for private-sector workers have been about $1,000 cheaper in Montana. In 2015, this price disparity disappeared. It is worth noting that these data are derived from a survey of employers. As such, there is a margin of error and some of these measures are quite volatile year to year.

Health insurance premiums in the health insurance exchanges in Montana have also increased dramatically. In 2015, a single, non-smoking, 40-year-old in Missoula faced a $241 monthly premium (before subsidies) for a silver plan. This was cheaper than the $276 average monthly premium across the U.S. However, in 2017, a single, non-smoking, 40-year-old in Missoula will face a $426 monthly premium. This is much higher than the $361 average monthly premium for a similar person across the U.S. Now, if this hypothetical individual qualified for subsidies (i.e., their income was below 400 percent of the poverty line or $47,500 in 2017), then what they pay each month is unchanged. The increase in premium is absorbed by the federal government. However, individuals whose incomes are above 400 percent of the poverty line bear the full brunt of this 77 percent increase over the past two years. While Montana has maintained an exchange with multiple providers, which is usually associated with lower prices, its small size may be making it hard to enroll a sufficiently large population to stabilize the market.

Looking forward, the election results introduced significant uncertainty in the health care sector. Republicans claim they want to repeal the Affordable Care Act, but how exactly they will do this and what they might replace it with remains unknown.

Logistics and Transportation

World Economic Slowdown Hits Home

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

The world economy continues to be the major factor impacting Montana's logistics and transportation industry. The slow growth in both developed and developing nations means that fewer goods are being produced, sold and transported. Montana's long-distance trucking industry and railroads are directly affected because they transport goods and materials 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 components of the economic base of the state and certain communities.

As reported in Table 1, there were 2,692 workers in long-distance trucking in 2015. These data do not include the truckers employed by out-of-state companies who are simply driving through Montana. Missoula and Yellowstone counties are both located on the east-west interstate and are the two major centers of long-distance trucking. Both accounted for 16 to 18 percent of the total statewide employment. After posting sizable post-recession gains in 2011 and 2012, statewide employment stalled from 2013 to 2015 as worldwide conditions worsened. Employment in Missoula and Yellowstone counties remained stable in 2015 after declining in 2014.

Two major rail systems cross Montana – the "highline" and the "low line." BNSF and Montana Rail Link (MRL) are the two major railroads in Montana, with several smaller lines serving specific areas in the state. The major rail centers are Billings, Missoula, Havre and Whitefish.

Table 1. Employment in Long-Distance Trucking, Montana and Selected Counties.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Montana	2665	2488	2378	2512	2435	2421	2509	2593	2659	2652	2692
Missoula County	645	616	553	421	403	372	468	492	504	421	423
Yellowstone County	556	500	484	514	575	583	639	645	565	487	494

Source: U.S. Bureau of Labor Statistics, QCEW.

We do not have employment and earnings data for Montana railroads due to federal confidentially regulations. The long lines empty cars parked along sidings throughout the state give a stark indication of reduced rail traffic here in Montana.

National rail traffic statistics are reported by the Association of American Railroads (AAR). Over the long run, railroads have benefited from worldwide economic growth and increased demand for raw materials and commodities. In addition, technological improvements such as unit trains and multi-modal containers have improved productivity and reduced costs. The AAR freight shipment data show a decrease of about 6.1 percent during the first 46 weeks of 2016. Total carload traffic during 2015 was down 6.1 percent. There is a slight glimmer of hope in the short-run data that the trough may have been reached. The figures for several weeks of November 2016 are slightly higher than the corresponding data for 2015.

The outlook for both long-distance trucking and railroads depend strongly on what happens to economies in the rest of the world, and the prospects aren't good. As reported in the summer 2016 issue of the Montana Business Quarterly, the "outlook suggests more downside than upside risks. In other words, there is a greater chance that things will get worse rather than better."

Technology and Innovation

High Tech Industry Creates Strong Growth, High-Paying Jobs

By Christina Quick Henderson
Montana High Tech Business Alliance

A 2016 report by the Bureau of Business and Economic Research at the University of Montana, based on a survey of 200 Montana High Tech Business Alliance members, found high-tech and manufacturing companies were projected to grow seven times faster than the overall Montana economy and pay average annual salaries of $57,000 – more than twice the median Montana wage. The sector shows no signs of slowing down in 2017.

Since acquiring RightNow Technologies in 2011 for $1.8 billion, Oracle has maintained hundreds of high-paying jobs in Montana and is building a new operations center in Bozeman. RightNow alumni are leveraging their knowledge and resources to scale new high-growth ventures. Bozeman tech firms launched by former RightNow employees include Foundant Technologies and Elixiter, both on the 2016 Inc. 5000 list of fastest-growing companies.

Venture capital investments in Montana are on the rise. Centricient, a Bozeman software company started by former RightNow CTO Mike Myer, closed a $6.5 million round in 2016 led by Venrock (venture capital arm of the Rockefeller family) and followed by Bozeman's Next Frontier Capital. In 2016 Next Frontier also participated in rounds for Missoula's Clearas Water Recovery ($4 million) and Orbital Shift ($1.25 million).

Montana-grown companies are expanding rapidly across the state, including GTUIT (Billings), ViZn Energy (Columbia Falls), onXmaps (Missoula), Ascent Vision (Bozeman), Loenbro (Great Falls), Montana Precision Products (Butte), and Spika Design and Manufacturing (Lewistown).

The quality workforce has prompted large out-of-state firms to locate manufacturing and development sites in Montana, including Applied Materials (Kalispell), Workiva (Bozeman), and SoFi (Helena). Companies like Advanced Technology Group (Missoula), FICO (Bozeman), Helix Business Solutions (Dillon), Kount (Whitefish) and Deloitte (Helena) are hiring scores of people for technology services roles.

Montana's quality of life is a magnet for retaining talent. When GlaxoSmithKline recently moved research and development to Maryland, 15 researchers from GSK's Hamilton lab formed their own biotech firm rather than leave the state. Inimmune launched at MonTEC in Missoula in 2016, in partnership with the University of Montana, keeping over $20 million in National Institutes of Health research contracts in Montana.

Montana is the No. 1 state for startup activity for four straight years, according to the Kauffman Entrepreneurial Index. Supported by the Blackstone LaunchPad and business schools at the University of Montana and Montana State University, more Montana startups are earning spots at highly competitive accelerator programs. In 2016 Montainer, a Missoula firm that builds tiny houses in shipping containers, attended the 500 Startups program in Mountain View and Bozeman's HERO app, to reduce drunken driving, attended a Techstars accelerator.

Entrepreneurship is also creating wealth and jobs in Montana's tribal communities. S&K Technologies in St. Ignatius won a $4.2 billion Air Force contract in 2016. S&K has returned more than $25 million in dividends to the Confederated Salish and Kootenai Tribes since 2002 and employs 500 people – 50 in Montana. Island Mountain Development Group in Harlem has a high-tech call center and supports 50 jobs and $1.4 million in payroll for the Gros Ventre and Assiniboine Nations.

Remote workforce is a growing trend, with tech firms hiring people on farms and ranches in towns like Cut Bank, Big Timber, Two Dot and Roundup. Rural communities gain new vitality by attracting remote workers, but fast broadband is a requirement.

Finding enough talent remains the No. 1 barrier to growth for Montana high-tech firms, particularly in computer science. Joint efforts to train workers and promote Montana jobs will help fast-growing companies fill positions and allow more Montanans to make a good living in the state they love.

Look for Montana's high-tech sector to add more firms and more high-paying jobs in 2017.

Real Estate and Residential Construction

Getting Back to Boom Times?

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

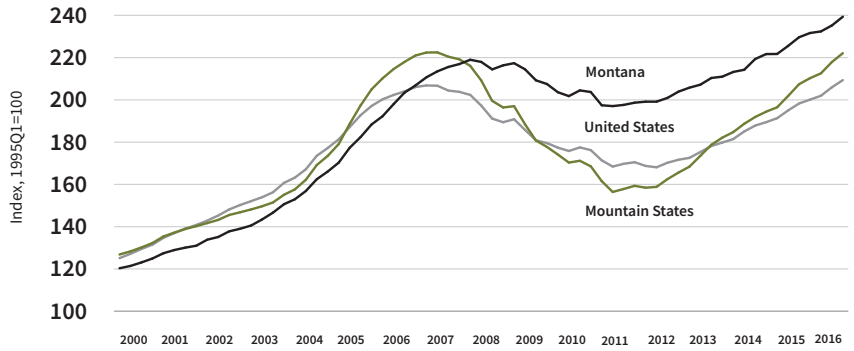
It's not exactly deja vu all over again, but Montana housing markets are mirroring national trends that more closely resemble the market conditions of the pre-recession boom than the stagnation years following the bust. With the exception of new home construction, which remains well off the rates experienced 10 years ago, most housing performance measures depicted growing strength throughout 2016.

Prices are Back

News at the end of 2016 that the Case-Shiller index of U.S. metro area home prices had climbed back to their pre-recession peak was reported with great fanfare. But Montana home prices reached that milestone two years earlier and are now about 10 percent higher than pre-recession levels. As shown in Figure 1, the price bust in Montana was shallower than both the U.S. average and the mountain states region of the country.

There is considerable variation in price behavior across the state. Price growth was most pronounced in Bozeman, with single-family homes reporting median sales prices in excess of $350,000. Other parts of the state have had more stable prices, but healthy sales volumes.

Figure 1. Housing Price Growth Since 2000, Montana, Mountain States and U.S.



Source: Federal Housing Finance Agency, Housing Price Index, All Transactions.

Evolution of the Mortgage Market

After years of very low mortgage rates, low rates of homeownership and low numbers of first-time home buyers, mortgage markets are beginning to shift back to historical norms. Thirty-year fixed rate mortgages spiked at the end of 2016, reaching above the 4 percent level for the first time in more than two years. First-time buyer volume has continued to strengthen in the national data, as rising rents have provided more spark to the owner-occupied market.

Evidence continues to mount of rising levels of risk in mortgage markets. According to the American Enterprise Institute (AEI), "sub-prime" mortgages – those with default rates in excess of 12 percent when subjected to stress tests – have grown at almost twice the rate of lower risk loans. AEI estimates that 71 percent of first time buyers had combined loan to value ratios (blending mortgages with other obligations) in excess of 95 percent.

Construction's Medium Term Challenge

Even as home-building rates in many Montana communities struggle to hit 60 percent of the building rates that they enjoyed in 2005, the pre-recession peak, several challenges to the continued construction recovery have become apparent. Perhaps none is larger than the labor force challenge.

Some quick, back of the envelope calculations reveal the scope of the problem. If currently depressed rates of home-building were to merely return to historical averages, the national economy would need about 500,000 more construction workers. But construction unemployment rates are near all-time lows and likewise, the pool of available workers who fit the age and gender profile of the construction workforce is only 500,000.

That means that if every available worker went into construction in the coming years, the supply would be adequate. Of course, that won't happen and so the pressure on builders to find qualified workers will intensify in the years ahead.

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