THE FUTURE OF HIGHER EDUCATION IN MONTANA

43RD ANNUAL ECONOMIC OUTLOOK SEMINAR

BUREAU OF BUSINESS AND ECONOMIC RESEARCH
UNIVERSITY OF MONTANA
ABOUT THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH

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

ADVISORY BOARD

Julia Altemus
Montana Wood Products Association
Missoula

Dennis Beams
Glacier Bank
Kalispell

Kathy Boelter
Arrow Solutions Group, Inc.
Billings

Diana Holshue
Federal Reserve Bank of Minneapolis
Helena

Allison Johnston
Payne West Insurance
Missoula

Matt Jones
BNSF Railway
Bozeman

Paddy Fleming
Montana Manufacturing Extension Center
Bozeman

Bill Whitsitt
Executive in Residence

DATES & LOCATIONS

Helena
Tuesday, January 23, 2018
Great Northern Hotel

Great Falls
Wednesday, January 24, 2018
Hilton Garden Inn

Missoula
Friday, January 26, 2018
Hilton Garden Inn

Billings
Tuesday, January, 30, 2018
DoubleTree

Bozeman
Wednesday, January 31, 2018
The Commons

Butte
Thursday, February 1, 2018
NorthWestern Energy General Office

Kalispell
Tuesday, February 6, 2018
Hilton Garden Inn

Lewistown
Tuesday, March 13, 2018
Central Montana Education Center

Havre
Wednesday, March 14, 2018
MSU Northern Hensler Auditorium
# Table of Contents and Program

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45-8:00</td>
<td>Coffee and registration</td>
</tr>
<tr>
<td>8:00-8:10</td>
<td>Introduction and overview</td>
</tr>
<tr>
<td>8:10-8:30</td>
<td>The Benefits of Higher Education</td>
</tr>
<tr>
<td></td>
<td>Bryce Ward, Associate Director, Bureau of Business and Economic Research</td>
</tr>
<tr>
<td>8:30-9:00</td>
<td>U.S. and Montana Outlooks</td>
</tr>
<tr>
<td></td>
<td>Patrick Barkey, Director, Bureau of Business and Economic Research</td>
</tr>
<tr>
<td>9:00-9:20</td>
<td>Energy Outlook</td>
</tr>
<tr>
<td></td>
<td>Paul Polzin, Director Emeritus, Bureau of Business and Economic Research</td>
</tr>
<tr>
<td>9:20-9:30</td>
<td>Break</td>
</tr>
<tr>
<td>9:30-9:50</td>
<td>Tourism Outlook</td>
</tr>
<tr>
<td></td>
<td>Norma Nickerson, Director, Institute for Tourism and Recreation Research</td>
</tr>
<tr>
<td>9:50-10:10</td>
<td>Agriculture Outlook</td>
</tr>
<tr>
<td></td>
<td>George Haynes, Professor and Agricultural Specialist, Montana State University</td>
</tr>
<tr>
<td>10:10-10:30</td>
<td>Health Care Outlook</td>
</tr>
<tr>
<td></td>
<td>Bryce Ward, Associate Director, Bureau of Business and Economic Research</td>
</tr>
<tr>
<td>10:30-10:50</td>
<td>Real Estate and Construction Outlook</td>
</tr>
<tr>
<td></td>
<td>Brandon Bridge, Director of Forecasting, Bureau of Business and Economic Research</td>
</tr>
<tr>
<td>10:50-11:00</td>
<td>Break</td>
</tr>
<tr>
<td>11:00-11:20</td>
<td>Forest Industry and Wood Products Outlook</td>
</tr>
<tr>
<td></td>
<td>Todd Morgan, Director, Forest Industry Research, Bureau of Business and Economic Research</td>
</tr>
<tr>
<td>11:20-11:40</td>
<td>Local Outlook (by county)</td>
</tr>
<tr>
<td></td>
<td>Patrick Barkey, Director, Bureau of Business and Economic Research</td>
</tr>
<tr>
<td>11:40-12:00</td>
<td>Local Expert Report</td>
</tr>
<tr>
<td>12:00-12:10</td>
<td>Break</td>
</tr>
<tr>
<td>12:10-1:00</td>
<td>The Future of Higher Education</td>
</tr>
<tr>
<td></td>
<td>Bob Nystuen, Montana University System Regent and Market President of Glacier Bank</td>
</tr>
<tr>
<td></td>
<td>Introduction by Bob Rowe, CEO, NorthWestern Energy</td>
</tr>
</tbody>
</table>

Presented by

Thanks to our statewide sponsors
The Benefits of Higher Education: Past, Present, and Future

Bryce Ward, Associate Director
Bureau of Bus. & Econ. Research

Note: The slides in this packet are intended as a handout that summarizes the material covered. They will not match the presentation.

Question 1: Why does higher education exist? What benefits does it provide?

Higher education exists to increase the capacity of the economy by:

-- generating new ideas (research)

-- educating students and the public (teaching).
The benefits generated by higher education are large (and likely exceed their costs).

Doubling the number of universities within a region is associated with a 4% increase in future GDP per capita. This growth is not the mechanical result of spending at the university. It is not reversal causality (i.e., growing places add universities). It stems from increasing the supply of the educated workers and via increased innovation. Areas with greater university density also have stronger pro-democratic views.


Research leads to tiny bumps in the set of human knowledge. What is this worth?

3 types of research
(value of each differs)

1) Pure basic research (Bohr) – adding ingredients to the cupboard

2) Pure applied research (Edison) – creating a new recipe

3) Use-inspired basic research (Pasteur) – doing both at the same time

<table>
<thead>
<tr>
<th></th>
<th>Immediate Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to</td>
<td></td>
</tr>
<tr>
<td>Fundamental Knowledge</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>Bohr’s Quadrant</td>
</tr>
<tr>
<td>YES</td>
<td>Pasteur’s Quadrant</td>
</tr>
<tr>
<td>NO</td>
<td>Other research:</td>
</tr>
<tr>
<td>YES</td>
<td>Edison’s Quadrant</td>
</tr>
</tbody>
</table>

How does academic research lead to tangible innovation and improvements in welfare?

1. Faculty publishing
2. University patenting and licensing
3. Faculty consulting
4. Faculty entrepreneurship
5. Informal interactions between university and industry researchers
6. Training and placement of students in industrial positions

Local economic effects of university research/university spending

Hausman (2017) – University innovation leads to employment and wages gains in University communities. University innovation leads to local start-ups, but most employment gains come from large firms opening or expanding near universities.

Kantor and Whalley (2014) -- $1 of additional research university funding leads to $0.83 of additional wages outside the education sector. Effects are larger for more research intensive schools and in industries aligned with university research.

Aghion et al (2009) – Effects of additional spending on higher education vary across states depending on state proximity to “technological frontier.” States close to the the technological frontier enjoy large benefits (e.g., $1000 of additional research funding per person in a school-age cohort raises per capita income in the whole state by $274 and $1000 in additional funding per person in a cohort for regular 4-year colleges increases per capita income by $18). States far from the technological frontier do not benefit from additional spending on research, but do benefit from additional spending on regular 4-year college.


MUS averaged $182M in annual research funding between 2007-2016. In recent years, this is below what would be expected based on Montana’s size.

Montana University System Research Funding as Share of All University Research Funding

The clustering of Montana’s tech companies near higher education is not coincidence.
Question 1b: What’s the value of educating students?

... and live longer, healthier lives.
Remaining life expectancy for US adults at age 25 by educational attainment, 2005

Graduates recognize the value of their degrees.
Across party lines, college grads viewed their college experience positively
% of college graduates with four-year degrees who say their own college education was useful in each

Question 2: Is college currently worth it?

Costs are rising. Will this continue?
Average Published and Net Prices in 2017 Dollars, Full-Time In-State Undergraduate Students at Public Four-Year Institutions, 1997-98 to 2017-18

<table>
<thead>
<tr>
<th></th>
<th>MSU</th>
<th>UM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Published TFRB</td>
<td>20,467</td>
<td>19,521</td>
</tr>
<tr>
<td>Net TFRB (14/15)</td>
<td>14,236</td>
<td>13,112</td>
</tr>
</tbody>
</table>

Source: College Board Trends in Higher Education

Are the benefits of higher education keeping pace with rising costs?

In 2016, most Republicans said college prepares someone well for workforce

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Not too</th>
<th>Somewhat</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>29</td>
<td>13</td>
<td>67</td>
</tr>
</tbody>
</table>

Rep/Lean Rep | 35 | 1 | 15 | 62 |
Dem/Lean Dem | 24 | 1 | 17 | 73 |

Note: Don’t know responses not shown. Source: Survey conducted May 25-June 29, 2016.
For average attendee, college pays off (gain in lifetime earnings exceed costs), and the expected return on college has increased over time.

Present discounted value of college relative to high school degree net of tuition, 1965–2008

College/high school difference, 2009 dollars

600,000 dollars --- 582K 590K
500,000 dollars --- 358K 439K
400,000 dollars --- 251K
300,000 dollars --- 268K
200,000 dollars --- 225K
100,000 dollars --- 138K

00,000 dollars --- 198K 129K


In spite of net cost growth, enrollment propensity has remained fairly constant...

Percentage of high school completers who were enrolled in 2- or 4-year colleges by the October immediately following high school completion, by level of institution: 2000–2015


... and the share of people with a college degree has continued to grow.

Percentage of the Population 25 Years and Over Who Completed High School or College by Age Groups Selected Years 1940–2015

Note: Data for every individual year are not available for years prior to 1964.


Aside: Assuming enrollment propensity remains constant, enrollment at Montana colleges is likely to grow over the next few years.

Montana high school graduates (actual and projected), 2011-2032

Source: Bransberger & Michelau (2016) Knocking at the College Door: Projections of High School Graduates

2011-12 2017-18 2021-22 2031-32
Some of the negativity directed at colleges appears to be an expression of partisanship.

Since 2015, sharp rise in share of Republicans saying colleges have a negative effect on the country

<table>
<thead>
<tr>
<th>% who say colleges and universities have a ___ effect on the way things are going in the country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among Rep/Lean Rep</td>
</tr>
<tr>
<td>Positive</td>
</tr>
<tr>
<td>56</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

Note: Don’t know/Other responses not shown. Source: Survey conducted June 6-18, 2017.

PEW RESEARCH CENTER

The Benefits of Higher Education

Question 3: Will the expected net benefits of college change over time?

(a) Will individuals be able to obtain the benefits of higher education via other means (e.g., online learning).

(b) Will the benefits of higher education fall (e.g., will automation or other forces reduce the returns to higher education in the labor market)?

The Benefits of Higher Education

Question 3a: Can something other than traditional higher education generate the same benefits with a lower cost?

A simple story for how universities generated benefits (proximity to information and expertise):

Historically, information and knowledge were scarce. However, they were relatively abundant at universities. Universities had much larger libraries than were available elsewhere. They had labs, computers, and other specialized equipment that were not easily accessed by those wanting to learn. They paid faculty with extensive training and knowledge to share their knowledge and experience. Thus, a big part of why people went to college was to access the scarce resources “necessary” to build their human capital.

Technology has made information abundant. Thus, if the primary source of value in colleges was access to information and expertise, then colleges may face increased competition from technology-driven substitutes.

Students differ.

Six types of students

1. Aspiring academics – traditional high achievers, plans for grad school.
2. Coming of age – don’t know what they want to do yet, but value broad offerings, active social culture, and ability to try lots of things.
3. Career starter – job oriented, looking for college that helps them achieve desired career in shortest time.
4. Career accelerators – older students looking to advance existing career.
5. Industry switchers – older students looking to start-over in new field.
6. Academic wanders – don’t know exactly what they are looking for.

Source benefits differ.

(0) College is fun.

(1) Colleges generate valuable human and social capital.
- Colleges make students smarter. That is, college helps students acquire cognitive and technical skills that they otherwise may not acquire:
  - Colleges generate learning that is hard to replicate on one’s own.
  - Colleges provide necessary constraints (i.e., people won’t learn unless forced by someone)
- Colleges create productive habits.
- Colleges help students build valuable social networks/social skills.
- Colleges provide inspiration and guidance (i.e., it’s a purposefully experimental period where people can explore different potential paths and access helpful supports once they’ve chosen a goal).

(2) College is a signal. Under purest version, college education itself does not do anything to transform students and make them more productive. It is simply something that allows high ability people to distinguish themselves from low ability people.

---

To what extent does college help individuals cultivate skills?

A = Decision making, communication, grit, self-control
B = Problem solving, organizational skills
C = Mid-level technical, high-level technical


---

Is higher education just signaling?

Graduation and postsecondary enrollment outcomes for 7th graders by academic performance

[Graph showing graduation and enrollment outcomes]

---

Schools differ.

Highly selective
- Tuition covers less than half of costs, 89% of students report informal interaction with faculty, 81% participate in school clubs, <25% of courses use multiple choice exams, 100% of students report writing a paper graded by professor, original course material; 8% attend part-time; 94% graduate with baccalaureate w/in 5 years at the institution they started at.

Non-selective
- 97% of costs covered by tuition or gov’t appropriation; 29% of students report informal interaction with faculty; 13% participate in school clubs; 70% of courses use multiple choice exams; 5% of students report writing a paper graded by professor; fairly standardized course material; 59% attend part-time w/in first 2 years; 7% graduate with baccalaureate w/in 5 years at any institution.

Can something other than traditional higher education generate the same benefits with a lower cost?

*Is the hypothetical alternative as fun?*

*Is the hypothetical alternative as capable of increasing consumers human and social capital?*

*Does it provide a useful signal in the marketplace?*

Technology may change some aspects of college education (particularly standardized elements that do not include much interaction, creativity, or extensive feedback from instructors), but it will likely free up resources that can be used to enhance not replace higher education.

---

**Urban economists have seen this movie before.**

*Lawton L. Tucker is Paul R. Buck Associate Professor of Financial Economy, Harvard University, and Faculty Research Fellow, National Bureau of Economic Research, both in Cam-

---

**Are Cities Dying?**

---

**Question 3b: Will economic changes reduce the benefits of attending college? Will demand for college educated workers fall?**

![Graph showing college wage premium, 1915-2005](source)


---

**As such, some are skeptical.**

There is no substitute for face-to-face interaction. Anyone can learn from a book—human interaction is what people pay for. I'd be angry if I was a student. [Digital education] is like porn for the mind.

*David Albourne*

*Urban Economist*

*University of Illinois*
The robots are coming, the robots are coming, ... 47% of US employment faces high risk of computerization.

Jobs are less susceptible if they involve:
1. Perception and manipulation (finger dexterity, manual dexterity, and cramped work space)
2. Creative intelligence (originality, fine arts)
3. Social intelligence (social perceptiveness, negotiation, persuasion, assisting or caring for others)

Source: Frey and Osborne (2013) “The future of employment: How susceptible are jobs to computerisation.”

Jobs that entail more social skills have seen faster employment and wage growth since 1980.


High wage jobs and jobs where most people have at least a Bachelor’s degree face much less risk from automation.

The existence of technology that can replace a worker does not mean that it will. Technology replaces workers when it is profitable to do so, so other conditions matter.

Technology replacing workers does not mean that overall employment or welfare will fall. Replacing workers in one area typically leads to growing employment elsewhere.

Source: Frey and Osborne (2013) “The future of employment: How susceptible are jobs to computerisation.”
Technological change (and other economic change) will reduce employment in some occupations in the future. Some of the jobs lost will be held by people with higher education. However, people with higher education are less likely to work in jobs affected by automation, and they are frequently better equipped to adapt to changing economic conditions.

As such, investments in higher education are expected to continue to pay off.

Summary

Why does higher education exist?

Higher ed exists to increase the capacity of the economy via research and teaching. Both of which produce significant economic benefits.

Is college worth it for today's students?

On average, the benefits (in terms of larger earnings, better health, etc.) exceed the costs.

Will college still be worth it in the future? Will technological or other economic change create a viable substitute for traditional higher education or reduce the returns to higher education?

While changes may modify some parts of higher ed (and provide a substitute for some lower aspects of it), learning from individualized feedback and face-to-face interactions with students and faculty will remain the heart of higher ed.

More educated people are less likely to face competition from machines and are likely better suited to adapt to changing economic conditions.
The U.S. Economy Quietly Improving

- Chaos in Washington not echoed on Wall Street
- Strong growth in second half of 2017
- Encouraging signs for business investment, wages
- Interest rates and inflation remain low
- Global growth has improved significantly

Upbeat News for the U.S. Economy
Percent Growth, Actual and Predicted

<table>
<thead>
<tr>
<th>GDP Growth</th>
<th>Final Sales</th>
<th>Consumer Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Investment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Synchronized Global Growth
Real GDP Growth, 2017

- Canada: 3.0%
- Eurozone: 2.1%
- Russia: 1.8%
- China: 6.8%
- Japan: 1.5%
- United States: 2.2%
- Brazil: 0.8%
- India: 6.7%

Source: World Bank
Growth Much Slower Than Past Cycles
Real GDP Index

Source: U.S. Bureau of Economic Analysis

U.S. Crude Oil Production Rising Again
U.S. Monthly Crude Oil Production, Thousand bbl.

Source: U.S. Energy Information Administration

The Cost of Lost Labor Force Participation
Contribution to Real GDP Growth, by Decade

Source: Standard and Poor

No Sign of New Production in Montana
Montana Monthly Crude Oil Production, Thousand bbl.

Source: U.S. Energy Information Administration
**Job Growth Continued Into 2017**

*Growth in Jobs, FY2016 and FY2017*

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cascade</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Flathead</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>Gallatin</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Lewis &amp; Clark</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Missoula</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>Silver Bow</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Yellowstone</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Rest of State</td>
<td>1000</td>
<td>1000</td>
</tr>
</tbody>
</table>

Source: Bureau of Labor Statistics

---

**Mixed Story for Most Important Commodities**

*Select Commodity Prices November 2017 vs. 5-Year High and Low*

<table>
<thead>
<tr>
<th>Commodity</th>
<th>FY2016 (Low)</th>
<th>FY2017 (High)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber (per thousand ft)</td>
<td>257</td>
<td>436</td>
</tr>
<tr>
<td>Barley (barrel)</td>
<td>3.16</td>
<td>5.69</td>
</tr>
<tr>
<td>Beef (per pound)</td>
<td>7.73</td>
<td>13.12</td>
</tr>
<tr>
<td>Wheat, SRW (per bushel)</td>
<td>4.78</td>
<td>8.05</td>
</tr>
<tr>
<td>Copper (per metric ton)</td>
<td>8471.79</td>
<td>8060.53</td>
</tr>
<tr>
<td>Platinum (per troy oz)</td>
<td>855.25</td>
<td>1074.55</td>
</tr>
<tr>
<td>Zinc (per metric ton)</td>
<td>3320.36</td>
<td>3239.33</td>
</tr>
<tr>
<td>Oil (per barrel)</td>
<td>10.34</td>
<td>106.55</td>
</tr>
</tbody>
</table>

Source: World Bank, USDA, Random Lengths

---

**Montana General Fund Revenue Collections, FY15-FY17, $ Millions**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>FY2016/FY2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change</td>
</tr>
<tr>
<td>Individual Income Tax</td>
<td>1180.5</td>
</tr>
<tr>
<td>Estimated Payments</td>
<td>271.2</td>
</tr>
<tr>
<td>Refunds</td>
<td>-256.1</td>
</tr>
<tr>
<td>Withholding</td>
<td>875.2</td>
</tr>
<tr>
<td>Property Tax</td>
<td>258.0</td>
</tr>
<tr>
<td>Corporation Tax</td>
<td>168.0</td>
</tr>
<tr>
<td>Oil and Gas Prod. Tax</td>
<td>187.8</td>
</tr>
<tr>
<td>Coal Severance Tax</td>
<td>61.8</td>
</tr>
<tr>
<td>General Fund Revenues</td>
<td>2169.1</td>
</tr>
</tbody>
</table>

Source: Montana Department of Revenue

---

**Spring Was Cruel to the Montana Treasury**

*Percent Change Jan-May 2017 vs. Jan-May 2016*

- Withholding
- Estimated Tax
- Final Payments
- Refunds
- Tot. Pers. Inc. Tax
- Montana
- U.S.

Source: Rockefeller Institute
Relationship Between Tax Receipts and Personal Income Far From Perfect

**Income Tax Receipts vs Adjusted Personal Income**

Parameter Estimates:
- Intercept: 177.8
- Slope: 0.0067

Source: BBER

**Real Nonfarm Earnings Growth**

Source: U.S. Bureau of Economic Analysis

**Personal Income Growth**

Source: U.S. Bureau of Economic Analysis

**Percent Growth in Personal Income 2014**

Source: Bureau of Economic Analysis
Montana’s Key Industries

- Agriculture producers battered by prices, drought
- Wood products companies encouraged by prices, salvage sales
- Tech expansion, construction healthy in western Montana
- Uncertainties in DC weigh on land use, health care
- Labor shortages impacting construction
- Real estate, financial institutions performing well

Growth in Nonfarm Earnings, Montana, 2015-2021

Source: BBER and U.S. Bureau of Economic Analysis

Questions?
Montana Energy Issues

Paul E. Polzin
Director Emeritus
Bureau of Business and Economic Research
University of Montana

What’s New in the Bakken?

Source: Federal Reserve Bank of St. Louis
Future Oil Price Trends

- Synchronized Global Recovery
  - EU now growing
  - Japan Unemployment falling
  - China still uncertain, but improving
- Saudi-Russia supply cut agreement extended
- Mideast oil supply disruptions possible

Break-Even Oil Prices

Source: Wall Street Journal

Global breakeven prices (considering only technical extraction costs) versus production. Source: Alliance Bernstein, October 2014

Nonfarm Jobs
Richland and Williams Counties

<table>
<thead>
<tr>
<th>Jobs, by Place of Residence</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richland Cty, MT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Jobs</td>
<td>6,775</td>
<td>6,747</td>
<td>6,423</td>
</tr>
<tr>
<td>Live in Richland</td>
<td>3,953</td>
<td>4,265</td>
<td>4,957</td>
</tr>
<tr>
<td>Live Elsewhere</td>
<td>2,822</td>
<td>2,482</td>
<td>1,826</td>
</tr>
<tr>
<td>Williams Cty, ND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Jobs</td>
<td>35,395</td>
<td>39,464</td>
<td>36,948</td>
</tr>
<tr>
<td>Live in Williams</td>
<td>15,732</td>
<td>17,369</td>
<td>18,507</td>
</tr>
<tr>
<td>Live Elsewhere</td>
<td>19,063</td>
<td>22,096</td>
<td>18,441</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

**EXPAND CLEAN ENERGY IN MONTANA**

- “It’s time to shift the state’s energy recourses away from greenhouse gas-emitting fossil fuels toward renewable energy.”
- “We Montanans can transform ourselves from being the West’s leader in greenhouse-gas pollution to the first state that commits to 100 percent reliance on clean energy.”
- “Few states are blessed with Montana’s wind and solar resources.”

**Missoulian** 10/17/2017

---

**The Long Road Ahead For Clean Energy in Montana**

---

**Wind Generation Potential**

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Capacity (MW)</th>
<th>State</th>
<th>Capacity (MW)</th>
<th>State</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>North Dakota</td>
<td>480,000</td>
<td>Texas</td>
<td>1,901,530</td>
<td>Texas</td>
<td>2,320,792</td>
</tr>
<tr>
<td>2</td>
<td>Texas</td>
<td>470,000</td>
<td>Kansas</td>
<td>952,371</td>
<td>Montana</td>
<td>1,012,355</td>
</tr>
<tr>
<td>3</td>
<td>Kansas</td>
<td>420,000</td>
<td>Montana</td>
<td>944,004</td>
<td>Kansas</td>
<td>955,239</td>
</tr>
<tr>
<td>4</td>
<td>Montana</td>
<td>410,000</td>
<td>Nebraska</td>
<td>917,999</td>
<td>Nebraska</td>
<td>921,075</td>
</tr>
<tr>
<td>5</td>
<td>South Dakota</td>
<td>400,000</td>
<td>South Dakota</td>
<td>882,412</td>
<td>South Dakota</td>
<td>890,626</td>
</tr>
</tbody>
</table>

Source: American Wind Energy Association and U.S. Renewable Energy Laboratory
### Electric Generation in Montana 2015

<table>
<thead>
<tr>
<th></th>
<th>Capacity</th>
<th>Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MW</td>
<td>Percent</td>
</tr>
<tr>
<td>Total</td>
<td>6,367</td>
<td>100</td>
</tr>
<tr>
<td>Coal Generation</td>
<td>2,488</td>
<td>39.1</td>
</tr>
<tr>
<td>Hydro Generation</td>
<td>2,628</td>
<td>41.3</td>
</tr>
<tr>
<td>Gas Generation</td>
<td>456</td>
<td>7.2</td>
</tr>
<tr>
<td>Wind Generation</td>
<td>662</td>
<td>10.4</td>
</tr>
<tr>
<td>All Other Generation</td>
<td>133</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Source: U.S. Energy Information Administration

---

### Daily Load

- **KW**

### Weekly Load

- **KWH**

---

2018 Montana Outlook Seminar
Types of Solar Generation

- Utility-scale solar generation. Large solar generation facilities that sell electricity to wholesale utility buyers.
- Distributed solar generation. Relatively small (e.g. rooftop, residential) electric generation serving end-use consumers. May sell excess generation back to utility.
2018 Travel & Recreation

Norma P. Nickerson, Director
Jeremy Sage, Economist and Associate Director
Institute for Tourism and Recreation Research
W.A. Franke College of Forestry and Conservation
University of Montana

Wild Fire Impact on Visitors

- 7.1% shortened their trip due to fires.
- 6.9% canceled additional trips.
- 8.6% of trips to Montana were cancelled due to the fire/smoke.

Percent of tourism businesses affected by fires and smoke in 2017.

78% Glacier Country
46% Missouri River Country
52% Southwest Montana
38% Yellowstone Country
50% Southeast Montana

Aberrations or trends?  2017 Fire & Smoke impact

Wildfire smoke update for Monday, Sept. 18, 2017: The smoke impacts have been caused by the fires smoldering and sending smoke into nearby drainages. Air quality on Monday is UNHEALTHY in Clearwater and UNHEALTHY FOR SENSITIVE GROUPS in Libby, Florence, Seeley Lake, and Trout Creek...
Wild Fire Impact on Residents

- 76% of Montanan’s frequently experienced a decrease in air quality.
- 66% said outdoor recreation activities they do near home were affected.
- 37% said they changed their travels in Montana.

Definitely an Aberration

Eclipse impacts

- Idaho Falls hotel’s Average Daily Rate of $368 was the highest of any US city in eclipse path.
- The impact was enough to significantly lift the entire U.S. hotel performance for Sunday, August 20th.
- Wyoming gained $63.4 million in nonresident visitor spending within 5 days of the eclipse.
- It took 2 hours to travel 4 miles on I-90 south of Dillon, MT after the eclipse.

Eclipse

August 21, 2017

244% increase in hotel revenue on Sunday before eclipse.
Aberration or trend?

Public land changes – monuments, park fees...

2016-17 Skier numbers
Whitefish Mt. Resort – best season on record
Big Sky & Bridger – last two seasons best ever

Nonresident Visitor Spending

Ski Area Visits

Nonresident Visitor Spending - Outputs
Thank you!
Enjoy your travels, wherever they may take you!

www.itrr.umt.edu
2018 Montana Agricultural Outlook

George Haynes
Kate Binzen Fuller
Department of Agricultural Economic & Economics
MSU Extension

Major Data Source: National Agricultural Statistics Service
Montana Field Office (Eric Sommer, Director)

Range Fires

KRTV Photograph, 2017

Drought

Billings Gazette, 2017

Uncertainty – April, 2017

Montana Drought Status by County - April 1, 2017

[Map showing drought status by county for Montana, with different shades indicating varying levels of drought severity.]
Uncertainty – September, 2017

Prices: Some Improvement

Production: Tough Year

2017/18 Overview

- Cattle
  - Improving cattle prices
    - US beef production increased by 5% in 2017
      - Anticipated to increase by 3% in 2018
    - US beef exports – increase 12% in 2017 - Japan
      - Forecasted to increase 4% in 2018
    - US beef imports – decreased slightly in 2017
      - Forecasted to increase 2% in 2018
      - (+) Australia and Mexico and (-) Brazil and Uruguay

Exports - Japan (+) and Imports – Australia/Mexico (+) and Brazil/Uruguay (-)
2017/18 Overview

Crops

– Improving grain prices
  • Montana wheat production down 40% in 2016/17
    – US wheat production down 25%
  • US wheat exports down 5%
    – Competition – Russia with tariff discounts
  • US wheat imports up 27%
  – Pulse acreage continues to increase, “humbling” production

Cash Receipts (1995 – 2017f)

U.S. Average Calf Prices (2017$)
2017 Futures Prices
($/hundred pounds, no basis adjustments - 11/22/17)

<table>
<thead>
<tr>
<th>Location</th>
<th>March</th>
<th>April</th>
<th>August</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago Mercantile Exchange</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeder Cattle</td>
<td>151</td>
<td>151</td>
<td>152</td>
<td>148</td>
</tr>
<tr>
<td>Live Cattle</td>
<td>126</td>
<td>126</td>
<td>115</td>
<td>114</td>
</tr>
</tbody>
</table>

CROPS (GRAIN, HAY, PULSES, AND ORGANIC CROPS)

Montana Major Crop Acreage

Global Wheat Production Shares

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>24.5</td>
<td>3.3</td>
<td>33.5</td>
<td>4.4</td>
</tr>
<tr>
<td>Canada</td>
<td>27.6</td>
<td>3.8</td>
<td>31.7</td>
<td>4.2</td>
</tr>
<tr>
<td>China</td>
<td>130.2</td>
<td>17.7</td>
<td>128.9</td>
<td>17.1</td>
</tr>
<tr>
<td>EU-27</td>
<td>160.0</td>
<td>21.8</td>
<td>145.5</td>
<td>19.3</td>
</tr>
<tr>
<td>India</td>
<td>86.5</td>
<td>11.8</td>
<td>87.0</td>
<td>11.5</td>
</tr>
<tr>
<td>FSU-12</td>
<td>118.2</td>
<td>16.1</td>
<td>130.5</td>
<td>17.3</td>
</tr>
<tr>
<td>U.S.</td>
<td>56.1</td>
<td>7.6</td>
<td>62.8</td>
<td>8.3</td>
</tr>
<tr>
<td>Other</td>
<td>132.4</td>
<td>18.0</td>
<td>134.1</td>
<td>17.8</td>
</tr>
<tr>
<td>Total</td>
<td>735.5</td>
<td>100.0</td>
<td>753.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: WASDE-571, 2017

Canola – 115,000 acres in 2017 (increase of 2.5 fold increase from 2016)
Montana Pulse Production

- Average yield declines: lentils 52%; dry peas 46%; dry beans 35%

Montana Pulse Prices ($2017)

Montana Organic Production

- #1 Organic wheat producer in US
  - $28.4 million gross sales (27% of US organic wheat sales)

- #1 Organic pulse producer
  - $5.4 million revenue (55% of US organic pulse sales)

- 5% of certified organic acres

Organic Revenue Shares

- Wheat 53%
- Pulses 6%
- Livestock 17%
- Hay 3%
- Other 21%
2018 Forecast

• Livestock:
  ▪ Herd expansion continues
  ▪ Stable to slightly higher prices

• Grains/Pulses:
  ▪ World wheat stocks are high
  ▪ Prices below historical averages
  ▪ Continued growth in pulse and oilseed crop acreage

Questions?

George Haynes, Ph.D.
haynes@montana.edu

Kate Binzen Fuller, Ph.D.
kate.fuller@montana.edu
Does Higher Education Improve Health?
Plus recent data on health care spending in Montana

Bryce Ward, Associate Director
Bureau of Bus. & Econ. Research

Note: The slides in this packet are intended as a handout that summarizes the material covered. They will not match the presentation.

In 2014, Montanans spent $8.23 billion on personal health care (e.g., doctor’s visits, hospital stays, prescription drugs, dental services, home health, nursing homes). This amounts to $8,221 per person.

Nearly 75% of personal health care spending in Montana is spent on hospital care, physician and clinical services, and prescription drugs.

Source: BBER analysis of CMS (2017) Health Care Spending by State of Residence
Health care spending in Montana by payer, 2014 ($millions)

- Medicaid: 1,061
- Medicare: 1,605
- Private health insurance: 2,500
- Other (e.g., out of pocket, Indian Health Service, CHIP, VA): 3,243

Source: BBER analysis of CMS (2017) Health Care Spending by State of Residence

Montana’s higher than average health care spending per capita reflects higher than average spending in the other category.

Health care spending per capita by payer 2014, MT v. US

- Medicaid: Montana 1,037, US 1,402
- Medicare: Montana 1,569, US 1,823
- Private: Montana 2,444, US 2,747
- Other (e.g., out of pocket, Indian Health Service, CHIP, VA): Montana 3,170, US 2,073

Source: BBER analysis of CMS (2017) Health Care Spending by State of Residence

Health care spending per person in Montana slightly exceeds the US level.

Health care spending per capita by state of residence: Health spending per capita, 2014

Montana’s faster than average growth is also concentrated in the “other” payer category.

Health care spending per capita by payer as % of US, 2001-2014

Source: BBER analysis of CMS (2017) Health Care Spending by State of Residence
Health care spending in Montana is high relative to income and has been growing faster the nation.

Personal health care spending as percent of personal income, 1991-2014


Is there a link between higher education, health, and health care?

More educated individuals live longer healthier lives.

Relative to high school graduates, people with a college degree enjoy 5 (women) or 6 (men) years of additional life expectancy at age 25.

Remaining life expectancy for US adults at age 25 by education, 2005

Montanans with college degrees report better health.

Self-reported health status, Montanans aged 25-64 by education

- Less than high school graduate: 38% Very Good/Excellent, 30% Fair/Poor
- High school graduate: 51% Very Good/Excellent, 19% Fair/Poor
- Some College: 60% Very Good/Excellent, 11% Fair/Poor
- Bachelor's degree: 73% Very Good/Excellent, 8% Fair/Poor

Source: BBER analysis of 2016 BRFSS.

Montanans with a college degree are less likely to report a disability.

% of Montanans ages 25-64 with a disability

- Less than high school graduate: 46% with a disability
- High school graduate: 28% with a disability
- Some College: 20% with a disability
- Bachelor's degree: 13% with a disability

Source: BBER analysis of 2016 BRFSS. A person is classified as disabled if they indicate impairment on any of the 6 “ADL disability” questions.

Montanans with college degrees are less likely to smoke.

% of Montanans ages 25-64 who are current smokers

- Less than high school graduate: 51%
- High school graduate: 31%
- Some College: 20%
- Bachelor's degree: 8%

Source: BBER analysis of 2016 BRFSS.

Montanans with college degrees are more likely to exercise.

% of Montanans ages 25-64 who exercised at least once in past 30 days

- Less than high school graduate: 63%
- High school graduate: 75%
- Some College: 84%
- Bachelor's degree: 91%

Source: BBER analysis of 2016 BRFSS.
The health effects of education may spill over to others.

1. **More educated mothers have healthier babies.**
2. **Adults with more educated parents report better health.**
3. **Parents with more educated children report better health (e.g., parents of college educated children are less likely to smoke).**
4. **A more educated spouse is also associated with better health.**

Rising mortality for less educated non-Hispanic whites reflects “deaths of despair” (death from drugs, alcohol, or suicide).

**Does education improve health?**

1. **Poor health => Less education**
2. **More education => Better health**
3. **Something else (e.g., parent income, genetics) => Both more education and better health**

While establishing a causal link between education and health is hard, some evidence suggests that education improves health.

Why might education improve health?

(1) More resources – education leads to higher income, insurance, better access to health care
(2) Information and cognitive skills – education provides more access to information and improves critical thinking skills and decision making ability.
(3) Non-cognitive skills – education boosts social-emotional skills that provide more stable family and work relationships which improve health.
(4) Social networks – more education leads to a large, more useful social network; the more educated also are more likely to have peers who disapprove of “bad” behavior.
(5) Safer work environment – the more educated are less likely to work at dangerous or physically demanding jobs.
(6) Preferences – e.g., education makes people more risk averse.
(7) Status – higher status reduces stress and stress-related illness
(8) Adoption – education makes people more likely to effectively adopt new knowledge and technology
The Outlook for Real Estate and Construction

Brandon Bridge, Economist and Dir. Of Forecasting
Bureau of Business and Economic Research

Are Real Estate Markets Finally Normal?

- Distress sales, foreclosures, & delinquencies are behind us
- Many Montana markets are booming
- Price appreciation, sales volumes roaring back
- Low inventories in high demand areas creating sellers market
- Single family home construction is restrained
- Underwater mortgages still exist

Strong Housing Price Growth Since 2011
FHFA Housing Price Index, U.S., 1991=100

Housing Price Increases Since 2000 Closely Track Economic Growth
Percent Change, Housing Price Index, 2016 vs. 2000

Source: Federal Housing Finance Agency.
**Price Growth in Great Falls Region is More Restrained**
Percent Growth in Housing Price Index by Zip Code Since 2012

- Conrad, 11.9%
- Great Falls, 11.6%

Source: Federal Home Finance Agency

---

**Whitefish Pacing Price Growth in Northwest Montana**
Percent Growth in Housing Price Index by Zip Code Since 2012

- Kalispell, 19.3%
- Whitefish, 26.8%

Source: Federal Home Finance Agency

---

**Strong Price Acceleration in Bozeman**
Percent Growth in Housing Price Index by Zip Code Since 2012

- Belgrade, 41.0%
- Bozeman, 36.2%

Source: Federal Home Finance Agency

---

**Price Growth More Restrained in Helena**
Percent Growth in Housing Price Index by Zip Code Since 2012

- Helena, 10.9%

Source: Federal Home Finance Agency
Urban Areas Faring Well in Missoula Region
Percent Growth in Housing Price Index by Zip Code Since 2012

Missoula (Rattlesnake), 16.9%
Hamilton, 17.3%

Source: Federal Home Finance Agency

Billings Home Prices Holding Up
Percent Growth in Housing Price Index by Zip Code Since 2012

Billings, 16.6%

Source: Federal Home Finance Agency

No Sign of Moderation in Rents

Montana Residential Rent, Inflation Adjusted (2014$)

Source: U.S. Census Bureau

Will the Erosion of Homeownership Rates Continue?

Source: U.S. Census Bureau
Sale Price Growth
Missoula County Market Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Sales</th>
<th>Median Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>80</td>
<td>$180,000</td>
</tr>
<tr>
<td>2012</td>
<td>88</td>
<td>$200,000</td>
</tr>
<tr>
<td>2013</td>
<td>98</td>
<td>$220,000</td>
</tr>
<tr>
<td>2014</td>
<td>1,080</td>
<td>$240,000</td>
</tr>
<tr>
<td>2015</td>
<td>1,200</td>
<td>$260,000</td>
</tr>
<tr>
<td>2016</td>
<td>1,320</td>
<td>$280,000</td>
</tr>
</tbody>
</table>

Source: Montana Department of Revenue.

Markets Looking Much Healthier
Ravalli County Market Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Sales</th>
<th>Median Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>80</td>
<td>$180,000</td>
</tr>
<tr>
<td>2012</td>
<td>88</td>
<td>$200,000</td>
</tr>
<tr>
<td>2013</td>
<td>98</td>
<td>$220,000</td>
</tr>
<tr>
<td>2014</td>
<td>1,080</td>
<td>$240,000</td>
</tr>
<tr>
<td>2015</td>
<td>1,200</td>
<td>$260,000</td>
</tr>
<tr>
<td>2016</td>
<td>1,320</td>
<td>$280,000</td>
</tr>
</tbody>
</table>

Source: Montana Department of Revenue.

Markets Looking Much Healthier
Silver Bow County Market Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Sales</th>
<th>Median Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>275</td>
<td>$90,000</td>
</tr>
<tr>
<td>2012</td>
<td>300</td>
<td>$100,000</td>
</tr>
<tr>
<td>2013</td>
<td>325</td>
<td>$110,000</td>
</tr>
<tr>
<td>2014</td>
<td>350</td>
<td>$120,000</td>
</tr>
<tr>
<td>2015</td>
<td>375</td>
<td>$130,000</td>
</tr>
<tr>
<td>2016</td>
<td>400</td>
<td>$140,000</td>
</tr>
</tbody>
</table>

Source: Montana Department of Revenue.

Markets Looking Much Healthier
Yellowstone County Market Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Sales</th>
<th>Median Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>600</td>
<td>$100,000</td>
</tr>
<tr>
<td>2012</td>
<td>620</td>
<td>$120,000</td>
</tr>
<tr>
<td>2013</td>
<td>640</td>
<td>$140,000</td>
</tr>
<tr>
<td>2014</td>
<td>660</td>
<td>$160,000</td>
</tr>
<tr>
<td>2015</td>
<td>680</td>
<td>$180,000</td>
</tr>
<tr>
<td>2016</td>
<td>700</td>
<td>$200,000</td>
</tr>
<tr>
<td>2017</td>
<td>720</td>
<td>$220,000</td>
</tr>
</tbody>
</table>

Source: Billings Association of Realtors.
Housing Starts, Yellowstone County vs. Montana

Index, 2001 = 100

Percent

0 50 100 150 200 250 300


Yellowstone

Montana

Source: Bureau of Business and Economic Research and U.S. Census Bureau.

Home Inventories Lowest in 25 Years
Homes for Sale as Percent of Households, U.S.

Source: NAR and U.S. Census Bureau

Steady Growth in Mortgage Originations

Mortgages Originated, Montana

26,000

22,000

18,000

14,000

10,000

2013 2014 2015 2016 2017*

Mortgage Dollar Volume, Montana

4

3.5

3

2.5

2

1.5

1

0.5

0

2013 2014 2015 2016 2017*

Source: AEI

Housing Affordability Not Easily Solved

Percent


Housing Prices

Median Household Income

Montana Housing Price Index and Montana Median Household Income Index, 2001 = 100
Source: U.S. Federal Housing Finance Agency and Census Bureau.
Looking Ahead to 2018

• Interest Rates are Moving Up

How Will Tax Reform Impact Real Estate?

• Law is friendly to commercial development
• Mortgage interest deduction caps (from $1M to $500K) will have limited impact on Montana
• Subsidized housing programs may be affected
• What will happen when budget deficits swell?
Looking Ahead to 2018

• Interest Rates are Moving Up
• Tax Reform Takes Hold
• Is Real Estate Risk Growing?

Assessing Housing Risk

• Price growth is challenging loan quality
• Median down payment of home buyer in 2017 was 10%
• 1.36 million mortgages underwater in 2017 is still twice the pre-crash level
• Other forms of debt (especially student debt) have risen significantly

Outlook for 2018

• Real estate markets in Montana will remain strong
• Affordability will get worse
• Residential construction will continue to underperform
• The boom in multifamily construction is over
• Risk is growing, but still not a concern
Montana’s Forest Industry & Wood Products

Todd A. Morgan, Director
Forest Industry Research Program
Bureau of Bus. & Econ. Research

Montana’s Forest Industry & Wood Products

Montana Forest-Related Employment

<table>
<thead>
<tr>
<th>Private sector</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood &amp; paper products</td>
<td>3,011</td>
</tr>
<tr>
<td>Forestry support activities</td>
<td>2,690</td>
</tr>
<tr>
<td>Forestry &amp; logging</td>
<td>1,534</td>
</tr>
<tr>
<td>Total</td>
<td>7,235</td>
</tr>
</tbody>
</table>

About 11,000 forest-related workers
Private sector: >$320 million in earnings
Public agencies: >$220 million in earnings

Montana Forest Industry

Montana Forests & Timber

- 25.9 million acres
- 69% federal ownership

National Forests
61% of timberland
76% of timber volume
20-25% of annual harvest
Over 60% of burned area
80% of insect impact area

County                                  | Forest acres (thousand) | National Forest |
----------------------------------------|-------------------------|-----------------|
Cascade                                 | 332                     | 53%             |
Flathead                                 | 2,794                   | 63%             |
Gallatin                                 | 902                     | 66%             |
Lewis & Clark                            | 1,391                   | 71%             |
Lincoln                                  | 2,182                   | 80%             |
Missoula                                 | 1,410                   | 51%             |
Ravalli                                  | 1,192                   | 88%             |
Silver Bow & Deer Lodge                  | 534                     | 63%             |
Yellowstone                              | 143                     | 0%              |
All counties                             | 25,820                  | 60%             |

Source: USDA Forest Service, RIA Program

Montana Forest Industry (Private Sector)

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2009</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>9,821</td>
<td>7,620</td>
<td>7,235</td>
</tr>
<tr>
<td>Earnings (millions)</td>
<td>$396</td>
<td>$277</td>
<td>$320</td>
</tr>
<tr>
<td>Primary sales (millions)</td>
<td>$1,078</td>
<td>$592</td>
<td>$563</td>
</tr>
<tr>
<td>Lumber production (MMBF)</td>
<td>1,001</td>
<td>418</td>
<td>506</td>
</tr>
</tbody>
</table>

Sources: Bureau of Economic Analysis, Western Wood Products Association, BBER.
Montana Wood Products Manufacturing

<table>
<thead>
<tr>
<th>Year</th>
<th>Earnings</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>300</td>
<td>6,000</td>
</tr>
<tr>
<td>2007</td>
<td>250</td>
<td>5,500</td>
</tr>
<tr>
<td>2009</td>
<td>200</td>
<td>5,000</td>
</tr>
<tr>
<td>2011</td>
<td>150</td>
<td>4,500</td>
</tr>
<tr>
<td>2013</td>
<td>100</td>
<td>4,000</td>
</tr>
<tr>
<td>2015</td>
<td>50</td>
<td>3,500</td>
</tr>
<tr>
<td>2017</td>
<td>0</td>
<td>3,000</td>
</tr>
</tbody>
</table>

Sources: Bureau of Economic Analysis, Western Wood Products Association, BBER. *2017 Estimated.

Montana’s Wood Products Industry
- ~140 establishments
- ~80 timber users
- 8 larger, 20+ small sawmills
- Plywood, MDF, particleboard
- Log homes, post & pole
- Pellets, bark, fuels-for-schools
- Mostly small, privately held
- Most don’t own forest land
- Nearly all rely on some timber from public lands

Montana Sawmill Energy Use
- Total on-site energy use per MBBtu of lumber:
  - 1.1 MBBtu per MBF = Southwest ave.
  - 3.8 MBBtu per MBF = Montana ave.
  - 9.4 MBBtu per MBF = National ave.
- Energy consumption of Montana sawmills:
  - Electricity: 16.1%
  - Diesel: 5.0%
  - Gasoline: 0.4%
  - Nat. gas: 1.2%
  - Wood: 77.3%

2017 Montana wildfires = 1,276,479 acres
- Forest Service > 600,000 acres
- Average = 175,000 acres
- National suppression cost > $2.4 Billion
- MT suppression costs > $74 million
In Western states, unhealthy days are frequently the result of wildfire smoke, and we have more of them. 81% of unhealthy days occurred in AK, CA, ID, MT, NV, UT, and WA. These states average 1.6 unhealthy days per 365 monitor days; other states average 0.11 unhealthy days.

Unhealthy days per 365 monitor days

Source: Bryce Ward, BBER analysis of EPA daily PM2.5 monitor data for all days and monitors from 2007-2016.

Forest Service
Burned Area Response

<table>
<thead>
<tr>
<th>Sheep Gap Fire</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total burned area</td>
<td>27,182</td>
</tr>
<tr>
<td>Outside of exclusion areas</td>
<td>18,956</td>
</tr>
<tr>
<td>Accessible (roads &amp; slopes)</td>
<td>11,352</td>
</tr>
<tr>
<td>Considered for timber mgmt.</td>
<td>6,719</td>
</tr>
<tr>
<td>Highest value &amp; slowest deterioration</td>
<td>6,390</td>
</tr>
</tbody>
</table>

- Strategic approach
- 25 additional staff
- Incident Command Structure
- Emergency Situation Determination requests

Source: https://fsfis.maps.arcgis.com/apps/Cascade/index.htm?appid=d9bba96bce794ed0909fbb7f59f13a75

SmartLam & CLT

- Cross-Laminated Timber (CLT)
- First U.S. manufacturer of CLT
- Columbia Falls, MT
- Buy & use softwood lumber

Images from SmartLam
Softwood Lumber (dis)Agreement

Canada supplies about 1/3 of lumber in US
- 90-95% of lumber imports come from Canada
- 70-80% of Canadian lumber is exported to US
- Canadian companies now own 40+ US mills
  - Hedging bets against tariffs & log supply
  - Closer to wood supply & housing markets
  - Have funds to buy US mills

Canadian Lumber
Volume & share of US market down in 2017
- US Commerce Department’s 20%+ tariffs
- Bark beetles & fires impacted BC timber supply
- Chinese markets improved

Montana’s Forest Industry & Wood Products Outlook
High expectations were not met in 2017.
Expectations are mostly positive for 2018.
- Broader US economic conditions
- National homebuilding
- Softwood lumber & other trade
- All eyes on the Forest Service – fire salvage
- Agriculture markets & weather

Thank you!
todd.morgan@business.umt.edu
www.BBER.umt.edu/FIR
The Outlook for Cascade County

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Cascade County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>81,755</td>
<td>5</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>0.5%</td>
<td>35</td>
</tr>
<tr>
<td>Median age</td>
<td>38.0</td>
<td>47</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>17.1%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>25.9%</td>
<td>14</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>13.5%</td>
<td>43</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Cascade County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$46,667</td>
<td>8</td>
</tr>
<tr>
<td>Construction</td>
<td>$58,723</td>
<td>8</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$60,719</td>
<td>4</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$32,736</td>
<td>12</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>$54,400</td>
<td>15</td>
</tr>
<tr>
<td>Information</td>
<td>$50,451</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity

Percent Share of Income in Basic Industries

Source: U.S. Bureau of Economic Analysis and BBER

Malmstrom AFB, 41%
Federal Civilian, 11%
Manufacturing, 10%
Health Care, 10%
State Govt. & Higher Ed., 8%
Other Basic, 5%
Trade Ctr. Finance, 4%
Trade Ctr. Wholesale Retail, 3%
Ag. And Related, 2%
What Has Grown Since 2007
Inflation Corrected Earnings in 2016 as Percent of 2007

- Health Care
- Fed Military
- State & Loc Govt
- Ret. Trade
- Construction
- Fed Civilian
- Finance
- Prof. Services
- Whol. Trade
- Accommodation
- Manufacturing
- Transp. & Warehousing

Source: U.S. Bureau of Economic Analysis

Growth Slowdown in 2016 Widespread
Percent Growth in Real Nonfarm Earnings, 2014-16

- Cascade
- Flathead
- Gallatin
- Lewis & Clark
- Missoula
- Rawlins
- Yellowstone
- Rest of State

Source: U.S. Bureau of Economic Analysis

Manufacturing and Health Care Were Bright Spots in 2016

- Construction and Manufacturing
- Retail & Whol. Trade
- Finance and Bus. Seriv.
- Health Care
- Accommodations & Food
- Government
- Mining
- Other

Growth in Inflation-Corrected Earnings, Cascade County ($ Millions)

- 2015
- 2016

Source: U.S. Bureau of Economic Analysis

Recent Wage Growth More Erratic
Inflation-Corrected Covered Wages, Index 2007=100

- Lewis and Clark
- Cascade
- Montana

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
Seasonally adjusted by BBER
Looking Ahead to 2018

- 2017 was a better year than 2016 for the Cascade County economy
- Manufacturing expansions and commercial construction are the bright spots
- Setbacks for farmers and ranchers have been felt
- Medicaid expansion has helped health care
- Stage is set for improved growth
The Outlook for Fergus County

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Fergus County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>11,413</td>
<td>19</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>-1.5%</td>
<td>45</td>
</tr>
<tr>
<td>Median age</td>
<td>46.9</td>
<td>24</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>22.7%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>28.6%</td>
<td>11</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>14.4%</td>
<td>46</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Fergus County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$36,816</td>
<td>31</td>
</tr>
<tr>
<td>Construction</td>
<td>$64,096</td>
<td>4</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$46,266</td>
<td>9</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$30,539</td>
<td>19</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>$39,450</td>
<td>25</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity
Percent Share of Income in Basic Industries

<table>
<thead>
<tr>
<th>Industry</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonres. Travel, 6%</td>
<td></td>
</tr>
<tr>
<td>State Govt., 13%</td>
<td></td>
</tr>
<tr>
<td>Federal Govt., 13%</td>
<td></td>
</tr>
<tr>
<td>Manufacturing, 15%</td>
<td></td>
</tr>
<tr>
<td>Heavy &amp; Civil Engineering, 17%</td>
<td></td>
</tr>
<tr>
<td>Ag. &amp; Ag. Services, 33%</td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis and BBER

Fergus County

Rehab., Other, 3%
What Has Grown Since 2007
Inflation Corrected Earnings in 2016 as Percent of 2007

Source: U.S. Bureau of Economic Analysis

Uneven Pattern of Growth in 2016
Percent Growth in Inflation-Corrected Nonfarm Earnings

Source: U.S. Bureau of Economic Analysis

Health Care Expanded Significantly in 2016

Source: U.S. Bureau of Economic Analysis

Recent Wage Growth Has Been Weak
Inflation-Corrected Covered Wages, Index 2007=100

Seasonally adjusted by BBER
Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
Looking Ahead to 2018

- Growth has picked up significantly beginning in 2015
- Manufacturing expansion, continued growth in heavy construction have led the way
- Recent success in visitor spending registering in the data
- Retail trade impacted by e-commerce competitors
- Stage is set for continued growth

Growth in Nonfarm Earnings, Fergus County, 2015-2021

Source: BBER and U.S. Bureau of Economic Analysis
The Outlook for Flathead County

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Flathead County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>98,082</td>
<td>4</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>7.9%</td>
<td>7</td>
</tr>
<tr>
<td>Median age</td>
<td>42.1</td>
<td>36</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>17.0%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>28.9%</td>
<td>12</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>13.5%</td>
<td>43</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Flathead County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$41,352</td>
<td>18</td>
</tr>
<tr>
<td>Mining</td>
<td>$27,385</td>
<td>21</td>
</tr>
<tr>
<td>Construction</td>
<td>$52,786</td>
<td>16</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$54,874</td>
<td>5</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$29,905</td>
<td>20</td>
</tr>
<tr>
<td>Information</td>
<td>$39,301</td>
<td>22</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity

Percent Share of Income in Basic Industries

- Trade Ctr. Retail: 2%
- Transportation: 8%
- Fed. Govt.: 12%
- Trade Ctr. Services: 12%
- Health Care: 14%
- Other Manufacturing: 14%
- Wood Products: 15%
- Nonresident travel: 19%
- Ag. and Other: 4%

Source: U.S. Bureau of Economic Analysis and BBER
What Has Grown Since 2007
Inflation Corrected Earnings in 2016 as Percent of 2007

Health Care
Construction
State & Loc Govt
Ret. Trade
Manufacturing
Prof. Services
Finance
Accommodation
Whol. Trade
Transp. & Warehousing
Other Services
Admin Support

Source: U.S. Bureau of Economic Analysis

Growth Slowdown in 2016 Widespread
Percent Growth in Real Nonfarm Earnings, 2014-16

Source: U.S. Bureau of Economic Analysis

Health Care Expanded Significantly in 2016

Construction and Manufacturing
Retail & Whol. Trade
Finance and Bus. Serv.
Health Care
Accommodations & Food
Government
Mining
Other

Growth in Inflation-Corrected Earnings, Flathead County ($ Millions)

Source: U.S. Bureau of Economic Analysis

Strong Wage Growth Continued in 2017
Inflation-Corrected Covered Wages, Index 2007=100

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
Looking Ahead to 2018

- Health care expansion fastest in state
- 2017 was a good year for construction
- Glacier Park visitation, visitor spending on strong trajectory
- Manufacturing, tech development not as strong as some other parts of the state
- Favorable conditions for continued strong growth
The Outlook for Gallatin County

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Gallatin County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>104,502</td>
<td>3</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>16.7%</td>
<td>2</td>
</tr>
<tr>
<td>Median age</td>
<td>33.2</td>
<td>53</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>11.2%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>48.0%</td>
<td>1</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>11.2%</td>
<td>53</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Gallatin County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$44,611</td>
<td>9</td>
</tr>
<tr>
<td>Construction</td>
<td>$63,276</td>
<td>5</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$47,487</td>
<td>8</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$41,960</td>
<td>5</td>
</tr>
<tr>
<td>Information</td>
<td>$50,781</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity
Percent Share of Income in Basic Industries

- Ag. And Related, 5%
- Mining & Transportation, 2%
- Federal Govt., 6%
- Nonresident Travel, 15%
- Selected Manufacturing, 14%
- Trade Ctr., Prof. Services, 16%
- MSU & State Govt., 26%
- Trade Ctr., Retail, 13%

Source: U.S. Bureau of Economic Analysis and BBER
What Has Grown Since 2007
Inflation Corrected Earnings in 2016 as Percent of 2007

Source: U.S. Bureau of Economic Analysis

Growth Slowdown in 2016 Widespread
Percent Growth in Real Nonfarm Earnings, 2014-16

Source: U.S. Bureau of Economic Analysis

Broad Based Expansion Continued in 2016

Source: U.S. Bureau of Economic Analysis

Strong Wage Growth Continued in 2017
Inflation-Corrected Covered Wages, Index 2007=100

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

Seasonally adjusted by BBER
Outlook for Job Growth is Slower
Employment Growth, Gallatin County 2013-21

Looking Ahead to 2018

- Very fast growth continued in 2017
- Construction footprint is very large
- Health care hitting its stride
- Manufacturing, tech development spreading beyond Bozeman
- Very few holes to be found in growth profile
- Expect strong growth to continue

Growth in Nonfarm Earnings, Gallatin County, 2015-2021

Source: BBER and U.S. Bureau of Economic Analysis
The Outlook for Hill County

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Hill County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>16,542</td>
<td>11</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>2.8%</td>
<td>24</td>
</tr>
<tr>
<td>Median age</td>
<td>34.5</td>
<td>51</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>13.9%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>23.5%</td>
<td>39</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>16.3%</td>
<td>46</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Fergus County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$43,455</td>
<td>11</td>
</tr>
<tr>
<td>Construction</td>
<td>$46,945</td>
<td>22</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$18,528</td>
<td>28</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$26,422</td>
<td>26</td>
</tr>
<tr>
<td>Information</td>
<td>$68,121</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity
Percent Share of Income in Basic Industries

- Telecommunications, 8%
- Fed. Govt., 11%
- State Govt., 12%
- Travel, Other, 15%
- Ag. & Related, 26%
- Railroad, 28%

Source: U.S. Bureau of Economic Analysis and BBER
Looking Ahead to 2018

- Government growth offset poor private sector performance in 2016
- Measured recovery in rail freight began in 2017
- Weaker Canadian dollar, e-commerce competition have challenged retail
- Federal growth is a wild card
- Sparks for better growth hard to find
The Outlook for Lewis and Clark County

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Lewis and Clark County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>67,682</td>
<td>6</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>6.1%</td>
<td>12</td>
</tr>
<tr>
<td>Median age</td>
<td>41.2</td>
<td>40</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>16.1%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>37.5%</td>
<td>7</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>10.6%</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Lewis and Clark County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$47,952</td>
<td>6</td>
</tr>
<tr>
<td>Construction</td>
<td>$52,419</td>
<td>17</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$48,751</td>
<td>7</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$29,184</td>
<td>23</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>$44,623</td>
<td>19</td>
</tr>
<tr>
<td>Information</td>
<td>$51,940</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity

Percent Share of Income in Basic Industries

- Federal Government, 19%
- State Government, 53%
- Education, Other, 5%
- Trade, Transportation & Information, 2%
- Construction, 4%
- Manufacturing, 4%
- Ag. & Mining, 3%

Source: U.S. Bureau of Economic Analysis and BBER
What Has Grown Since 2007
Inflation Corrected Earnings in 2016 as Percent of 2007

Source: U.S. Bureau of Economic Analysis

Growth Slowdown in 2016 Widespread
Percent Growth in Real Nonfarm Earnings, 2014-16

Source: U.S. Bureau of Economic Analysis

Government Expanded Significantly in 2016

Source: U.S. Bureau of Economic Analysis

Recent Wage Growth More Erratic
Inflation-Corrected Covered Wages, Index 2007=100

Seasonally adjusted by BBER
Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
Steady Job Growth Expected
Employment Growth, Lewis and Clark County 2013-21

Looking Ahead to 2018

- A struggle to hit faster growth mark
- Growth hinges on growth in state government
- Construction flying under the radar to perform well
- Visitor based businesses performing well
- Professional sectors underperforming
- State spending will restrain future growth

In-Migration to Lewis and Clark County by Source, 2009-13

Growth in Nonfarm Earnings, Lewis and Clark County, 2015-2021
The Outlook for Missoula and Ravalli Counties

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Missoula County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>116,130</td>
<td>2</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>6.2%</td>
<td>11</td>
</tr>
<tr>
<td>Median age</td>
<td>35.3</td>
<td>50</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>13.6%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>41.8%</td>
<td>2</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>12.1%</td>
<td>48</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Missoula County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$43,410</td>
<td>9</td>
</tr>
<tr>
<td>Construction</td>
<td>$54,660</td>
<td>13</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$43,388</td>
<td>12</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$31,501</td>
<td>17</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>$57,028</td>
<td>13</td>
</tr>
<tr>
<td>Information</td>
<td>$54,112</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Ravalli County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>42,088</td>
<td>7</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>4.7%</td>
<td>13</td>
</tr>
<tr>
<td>Median age</td>
<td>48.1</td>
<td>18</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>22.8%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>25.8%</td>
<td>16</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>19.3%</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau
Ravalli County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$31,020</td>
<td>46</td>
</tr>
<tr>
<td>Construction</td>
<td>$43,445</td>
<td>29</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$33,139</td>
<td>15</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$20,889</td>
<td>43</td>
</tr>
<tr>
<td>Information</td>
<td>$26,500</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity

Percent Share of Income in Basic Industries

- Nonresident Travel: 10%
- Trade Ctr. Retail Wholesale: 3%
- Trade Ctr. Other Services: 11%
- Trade Ctr., Medical: 16%
- Federal Govt.: 13%
- UM & Other State Govt.: 24%
- Transportation: 9%
- Wood and Paper: 6%

Source: U.S. Bureau of Economic Analysis and BBER

Drivers of Economic Activity

Percent Share of Income in Basic Industries

- Ag. And Mining, 6%
- Retail, 4%
- Federal Government, 8%
- Medical Research, 17%
- Commuters, 54%
- Other, 8%

Source: U.S. Bureau of Economic Analysis and BBER

What Has Grown Since 2007

Inflation Corrected Earnings in 2016 as Percent of 2007

Missoula County

- Health Care
- State & Loc Govt
- Prof. Services
- Construction
- Accom. & Food
- Finance
- Other Services
- Admin Support
- Whol. Trade
- Fed Civilian
- Transp. & Warehousing

Source: U.S. Bureau of Economic Analysis
Growth Slowdown in 2016 Widespread
Percent Growth in Real Nonfarm Earnings, 2014-16

Source: U.S. Bureau of Economic Analysis

Government Expanded Significantly in 2016
Missoula County

Growth in Inflation-Corrected Earnings, Missoula County
($ Millions)

Source: U.S. Bureau of Economic Analysis

Strong Wage Growth Continued in 2017
Inflation-Corrected Covered Wages, Index 2007=100

Seasonally adjusted by BBER
Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Steady Job Growth Expected
Employment Growth, Missoula County 2013-21

Source: IHS Markit
Looking Ahead to 2018

- Missoula’s recent growth edging closer to state leaders
- Commercial construction, health care expanding – are they sustainable?
- UM’s woes have not yet registered in the data
- Tech development is moving to the forefront
- Growth will be challenged by UM, fallback in construction activity

Growth in Nonfarm Earnings, Missoula County, 2015-2021

Source: BBER and U.S. Bureau of Economic Analysis
Growth in Nonfarm Earnings, Ravalli County, 2015-2021

Source: BBER and U.S. Bureau of Economic Analysis

2018 Missoula and Ravalli Outlook
The Outlook for Silver Bow County and Southwestern Montana

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Silver Bow County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>34,553</td>
<td>8</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>1.0%</td>
<td>33</td>
</tr>
<tr>
<td>Median age</td>
<td>40.7</td>
<td>42</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>17.1%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>25.9%</td>
<td>14</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>12.5%</td>
<td>47</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Silver Bow County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$52,912</td>
<td>2</td>
</tr>
<tr>
<td>Mining</td>
<td>$279,392</td>
<td>1</td>
</tr>
<tr>
<td>Construction</td>
<td>$45,244</td>
<td>26</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$61,243</td>
<td>3</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$49,945</td>
<td>3</td>
</tr>
<tr>
<td>Information</td>
<td>$42,429</td>
<td>18</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity

Percent Share of Income in Basic Industries

- Nonresident Travel, 5%
- Trade Ctr., Health Care, 5%
- Federal Govt., 6%
- Health Care, 7%
- Manufacturing, 9%
- Utility, 13%
- Montana Tech, State Govt., 15%
- Mining, 41%
- Other Basic, 5%

Source: U.S. Bureau of Economic Analysis and BBER
Job Growth Forecast is Pessimistic
Employment Growth, Silver Bow County 2013-21

Looking Ahead to 2018

- Worst of the commodity price bust appears to be over
- Employment is up by 50 percent since the low point of the early 1990s
- Recent success in visitor spending registering in the data
- Weaknesses in health care, construction stand out
- Continued slow growth is expected
The Outlook for Yellowstone County

Patrick M. Barkey, Director
Bureau of Bus. & Econ. Research

Yellowstone County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population, 2016</td>
<td>158,437</td>
<td>1</td>
</tr>
<tr>
<td>Percent change since 2010</td>
<td>7.1%</td>
<td>10</td>
</tr>
<tr>
<td>Median age</td>
<td>38.2</td>
<td>46</td>
</tr>
<tr>
<td>Percent Aged 65 or Older</td>
<td>15.4%</td>
<td></td>
</tr>
<tr>
<td>Percent with Bachelors Degree or Higher (Age 25+)</td>
<td>29.2%</td>
<td>8</td>
</tr>
<tr>
<td>Percent without Health Insurance Coverage, 2015</td>
<td>12.4%</td>
<td>46</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

Yellowstone County Profile

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per Job, 2016</td>
<td>$52,721</td>
<td>3</td>
</tr>
<tr>
<td>Mining</td>
<td>$163,824</td>
<td>2</td>
</tr>
<tr>
<td>Utilities</td>
<td>$115,482</td>
<td>7</td>
</tr>
<tr>
<td>Construction</td>
<td>$64,327</td>
<td>3</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$86,180</td>
<td>1</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>$32,300</td>
<td>13</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>$63,097</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Economic Analysis

Drivers of Economic Activity

Percent Share of Income in Basic Industries

- Transportation, 10%
- Higher Ed. and State Govt., 7%
- Trade Cit. Retail Wholesale, 11%
- Health Care, 12%
- Mining, 16%
- Selected Manufacturing, 16%
- Nonresident Travel, 5%
- Other Services, 11%
- Ag. & Related, 2%

Source: U.S. Bureau of Economic Analysis and BBER
What Has Grown Since 2007
Inflation Corrected Earnings in 2016 as Percent of 2007

Source: U.S. Bureau of Economic Analysis

Growth Slowdown in 2016 Widespread
Percent Growth in Real Nonfarm Earnings, 2014-16

Source: U.S. Bureau of Economic Analysis

Earnings Reversal in 2016 Was Widespread

Source: U.S. Bureau of Economic Analysis

Erratic Wage Growth Since 2016
Inflation-Corrected Covered Wages, Index 2007=100

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

Seasonally adjusted by BBER

2018 Montana Outlook Seminar
Looking Ahead to 2018

- 2016 not quite as bad as earnings data suggest
- Construction, manufacturing did better in 2017
- Energy and agriculture woes in a four state area being felt in Billings
- Consolidation and uncertainty ahead for health care
- Growth not likely to exceed state average in years ahead
2018 ECONOMIC OUTLOOK SEMINAR
FEB 6, 2018

Local Report: Kalispell, MT

DOWNTOWN

2017 Openings
- Herberger’s, 40,000 sq. ft. addition
- Montana Coffee Traders, 8,000 sq. ft.
- Blue Samurai Sushi Bar & Grill
- Noble Dance
- The Montana Scene
- Fuel Fitness
- Rival’s Sports Bar

2018 Openings
- Bias Brewing
- Fresh Life, 16,000 sq. ft.
- Sunrift Beer Company
- Vilya Spirits
- Scottibell’s
- First American Title
- Mudman Burgers

DOWNTOWN

RETAIL & RESTAURANTS

2017 Openings
- Brass Taps
- Costa Vida
- Hobby Lobby
- Homegoods
- Staggering Ox
- McDonald’s
- Kalispell Ford

2018 Openings
- Harbor Freight
- Green Nissan
- Green Hyundai
- Whitefish Credit Union, Columbia Falls
- REI
- MOD Pizza
- Panera Bread
- Kobe Japanese Steak House
- Kay Jewelers
- T-Mobile
**Retail & Restaurants**

**Industrial**

- **Glacier Rail Park**
  - 40 acre property off Whitefish Stage Road
  - $11 million construction by LHC, $10m T.I.G.E.R. Grant
  - Relocating CHS and Northwest Drywall
  - Will remove railroad tracks through downtown Kalispell, add linear trail from Woodland Park and develop new connector streets.

- **U.S. Optics**
  - Leading company in firearm optics industry. Relocated from Southern California to Kalispell in September 2017.

**Education & Community**

- **2017 Openings**
  - Flathead Valley Community College Student Housing – 124 beds, $7.8m
  - Legends Field
  - Bigfork High School - $13m
  - Glacier Park International Airport parking expansion – 224 new spaces, $1m
  - Flathead County Detention Center – 36 new beds, $1.8m
  - Whitefish City Hall and Parking, $16m
  - Kidsports, Phase 1

- **2018 Openings**
  - Rankin Elementary School, $15m
  - Flathead County Fairgrounds update
EDUCATION & COMMUNITY

COUNTRY INN & SUITES

Location: Glacier Park International Airport  
Est. Completion: June 2018  
Size: 62,000 sq. ft – 100 rooms  
Est. Cost: $5+ million  
Also includes pads for restaurant & convenience store

MARRIOTT TOWNEPLACE

Location: Whitefish  
Est. Completion: Summer 2018  
Size: 63,171 sq. ft – 81 rooms  
Est. Cost: $7.3

HOSPITALITY

2016 Openings  
Marriott Springhill Suites, Kalispell  
Firebrand, Whitefish  
Hampton Inn & Suites, Whitefish  
Cedar Creek Lodge, Columbia Falls

2018 Openings  
Marriott Towneplace, Whitefish  
Country Inn & Suites, Kalispell
HEALTH CARE

2017 Openings
Glacier View Professional Building
Immanuel Lutheran Communities Retreat at Buffalo Hill, $4m
Immanuel Lutheran Communities Memory Lodge at Buffalo Hill, $6.7m

2018 Openings
Kalispell Regional Medical Center Emergency Room, $14m
Montana Children’s Medical Center, $37.8m
Digestive Health Institute of Montana $12.9m
Immanuel Lutheran Communities Villas at Buffalo Hill, $14.5m
Immanuel Lutheran Communities Skilled Care Center, $3.2m
Grandpa Albert

“My grandparents further believed that in order to provide for the family if hard-times came, a college education for the eldest child could provide him a good job that would allow them to support the Nystuen brood and preserve the family farm.”

Challenges of Higher Ed.

“We welcome constructive debate — but invalid critiques should not be allowed to cast a fog over the overarching value of our institutions.”

Montana’s Outlook

“For 125 years Montanans have chosen to invest in accessible and affordable high-quality education that allowed generations of students to find jobs, make sizable contributions both economically, socially and culturally, and create the one-of-a-kind fabric of our state.”
Out here, small business is big business.

At First Interstate Bank, we know the right loan can help your company compete with the big dogs. Business loans for any size—it’s you and together.

Find out more at firstinterstate.com
Reliability matters.
Connect your business to more.
Hosted IP Phone | Integrated Voice & Data | Business Broadband
Ethernet, MPLS & Dedicated T-1 | Hosted Server | Managed WAN
Colocation | Cloud Solutions | IT Consulting & Services

Your partner for a healthy life.

1101 26th Street South, Great Falls, MT 59405  |  406.455.5000  |  www.benefis.org
Montana Divisions

Visit www.glacierbancorp.com for a complete list of division locations.

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

We’re keeping Montana picture-perfect.

BNSF: We’re Moving Montana’s Economy

For more than a century, BNSF Railway has played an important role in Montana’s economy. As the state’s primary freight rail transporter, BNSF’s 32,500-mile network links Montana’s agricultural and energy industries to domestic and international markets. BNSF handles nearly 1.9 million carloads of freight in Montana annually.

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

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

The BNSF Foundation has contributed more than $3.2 million in donations to Montana charities since 2010.
NorthWestern Energy has invested more than $1 billion in providing 60 percent of Montana’s energy through renewable resources like wind and water. This major investment is part of our ongoing commitment to responsibly power our homes and businesses, protect our environment, and keep our state beautiful now and for future generations.