FINDING GOOD WORKERS
New Challenges, New Solutions
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 bbermail@business.umt.edu if we can be of any help to you or your business.

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Bigfork

DATES & LOCATIONS

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Northern Hotel

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March 18, 2020
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Big Sky
March 19, 2020
Lone Peak Cinema
WELCOME TO THE 2020 ECONOMIC OUTLOOK SEMINAR

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Bureau of Business and Economic Research
University of Montana

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Montana High Tech Business Alliance

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Bureau of Business and Economic Research
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Department of Agricultural Economics & Economics
Montana State University

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Finding Good Workers: A Good Problem?

- Tight labor markets are pushing up wages, good for workers
- Low unemployment has always been the goal of economic policy
- Wage pressures from tight labor markets have yet to show up in inflation
- There are “bad jobs” as well as “good workers”
- “The market will fix it”
- Unemployment rates are an inadequate measure of labor market health
- Tight markets reveal daunting challenges producing workers with the right skills
- Some solutions are better than others
- Solutions that tap into underutilized resources and match skill with jobs better are especially attractive

Less Than One Unemployed Worker for Every Job Opening in the U.S. Economy Today

Unemployment Rates, Nov 2019

Source: U.S. Bureau of Economic Analysis
Number of Unfilled Positions Has Doubled in the Last 8 Years
Total Unfilled Job Vacancies, U.S., Millions

[Bar chart showing an increase from 2009 to 2019, reaching 7.3 million unfilled jobs in 2019. Source: OECD]

Why?

1. Demographics
2. Skill Mismatch
3. Generational Change
4. Everything Else

The Broad Footprint of Demographic Change

- Economic Growth
- Inflation
- Asset Returns
- Real Estate
- Public and Private Pensions
- Oh yes ... the labor market!

[Population pyramid for Montana in 2001, indicating a growth in older population shares.]

Source: Montana Population Tree

Year: 2001
**Working-age population set to expand in US while shrinking on average across the G10**

Growth in Working Age Population (20-64)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>0.0%</td>
<td>0.5%</td>
<td>1.0%</td>
<td>1.5%</td>
<td>2.0%</td>
<td>1.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>G10 ex-US Average</td>
<td>-0.5%</td>
<td>0.0%</td>
<td>0.5%</td>
<td>1.0%</td>
<td>1.5%</td>
<td>2.0%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Source: Census Bureau, United Nations, Morgan Stanley Research

**Total Population, Share of 80+ and 60+ Groups**

<table>
<thead>
<tr>
<th></th>
<th>Total Population (millions)</th>
<th>Population Growth (% p.a.)</th>
<th>Share of 80+ (%)</th>
<th>Share of 60+ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>7,550</td>
<td>1.4</td>
<td>0.9</td>
<td>1.8</td>
</tr>
<tr>
<td>France</td>
<td>65</td>
<td>0.5</td>
<td>3.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Germany</td>
<td>82</td>
<td>0.2</td>
<td>3.2</td>
<td>6.3</td>
</tr>
<tr>
<td>Italy</td>
<td>59</td>
<td>0.1</td>
<td>2.6</td>
<td>7.1</td>
</tr>
<tr>
<td>Japan</td>
<td>127</td>
<td>0.1</td>
<td>1.7</td>
<td>8.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>66</td>
<td>0.5</td>
<td>3.1</td>
<td>5.1</td>
</tr>
<tr>
<td>United States</td>
<td>324</td>
<td>0.9</td>
<td>2.6</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Labor force participation rates of White men 25 to 54 years old by education, annual averages

<table>
<thead>
<tr>
<th>Education Level</th>
<th>1994</th>
<th>2007</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school diploma</td>
<td>82.2</td>
<td>85.3</td>
<td>82.7</td>
</tr>
<tr>
<td>High school graduate, no college</td>
<td>92.4</td>
<td>90.5</td>
<td>87.3</td>
</tr>
<tr>
<td>Some college or associate degree</td>
<td>94.0</td>
<td>92.5</td>
<td>89.7</td>
</tr>
<tr>
<td>Bachelor’s degree or higher</td>
<td>97.0</td>
<td>95.9</td>
<td>94.9</td>
</tr>
</tbody>
</table>


More Challenges in the Pipeline?

- Gen Z (born 1996-2010) value job satisfaction, college education, flexible hours more than Millennials
- Half of the most popular jobs they looked at on Indeed are tech jobs (right)
- 3 percent say they want a job in the construction trades (NAHB survey)
- 63 percent of those undecided about careers would consider construction trades even if pay were above $100,000

Most Popular Jobs of the Next Generation

<table>
<thead>
<tr>
<th>Job</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>iOS developer</td>
<td>0</td>
</tr>
<tr>
<td>Computer vision engineer</td>
<td>1</td>
</tr>
<tr>
<td>Machine learning engineer</td>
<td>2</td>
</tr>
<tr>
<td>Audio engineer</td>
<td>3</td>
</tr>
<tr>
<td>Daycare assistant</td>
<td>4</td>
</tr>
<tr>
<td>Beauty consultant</td>
<td>5</td>
</tr>
<tr>
<td>Junior software engineer</td>
<td>6</td>
</tr>
<tr>
<td>Bridal consultant</td>
<td>7</td>
</tr>
<tr>
<td>Photojournalist</td>
<td>8</td>
</tr>
<tr>
<td>Bookkeeper</td>
<td>9</td>
</tr>
<tr>
<td>Anesthesiologist</td>
<td>10</td>
</tr>
<tr>
<td>Game master</td>
<td>11</td>
</tr>
<tr>
<td>Entry level developer</td>
<td>12</td>
</tr>
<tr>
<td>Veterinary assistant</td>
<td>13</td>
</tr>
<tr>
<td>Associate dentist</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: Indeed.com

Wages Are Accelerating, Especially for the Lowest Paid Workers

Non-California West Continues to Attract New Migrants

<table>
<thead>
<tr>
<th>State</th>
<th>Migration Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>+25,821 0.6%</td>
</tr>
<tr>
<td>Oregon</td>
<td>+27,360 1.5%</td>
</tr>
<tr>
<td>Washington</td>
<td>+43,207 1.4%</td>
</tr>
<tr>
<td>Montana</td>
<td>+43,700 1.5%</td>
</tr>
<tr>
<td>Idaho</td>
<td>+20,414 0.7%</td>
</tr>
<tr>
<td>Wyoming</td>
<td>+91,017 1.3%</td>
</tr>
</tbody>
</table>

Source: Federal Reserve Bank of Atlanta

Net Domestic Migration by State, 2019

<table>
<thead>
<tr>
<th>Change</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 0.5%</td>
<td></td>
</tr>
<tr>
<td>0.1% - 0.5%</td>
<td></td>
</tr>
<tr>
<td>-0.2% - 0.1%</td>
<td></td>
</tr>
<tr>
<td>Less than -0.2%</td>
<td></td>
</tr>
</tbody>
</table>
The Market is Working: Strong Hiring is Drawing More Workers Into the Labor Market

U.S. Labor Force Participation Rates, Prime Aged Workers, Percent

Second Take: Improved Participation Rates Are Because Fewer People Are Leaving

Inflow and Outflow Rates from Labor Force, U.S., Prime Aged Workers
Source: Federal Reserve Bank of San Francisco

International Migration is Lower than in the 1990s

Source: U.S. Census Bureau

Border and Urban States Attract Foreign Migrants

Net International Migration by State, 2019
### Retirement Ages: Effective and Official

<table>
<thead>
<tr>
<th>Retirement Age (Years)</th>
<th>Men Effective</th>
<th>Official</th>
<th>Women Effective</th>
<th>Official</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>72.0</td>
<td>61.0</td>
<td>72.2</td>
<td>61.0</td>
</tr>
<tr>
<td>Mexico</td>
<td>71.6</td>
<td>65.0</td>
<td>67.5</td>
<td>65.0</td>
</tr>
<tr>
<td>Turkey</td>
<td>66.1</td>
<td>60.0</td>
<td>66.3</td>
<td>58.0</td>
</tr>
<tr>
<td>Japan</td>
<td>70.2</td>
<td>65.0</td>
<td>68.8</td>
<td>65.0</td>
</tr>
<tr>
<td>New Zealand</td>
<td>68.4</td>
<td>65.0</td>
<td>66.4</td>
<td>65.0</td>
</tr>
<tr>
<td>Switzerland</td>
<td>66.0</td>
<td>65.0</td>
<td>64.3</td>
<td>64.0</td>
</tr>
<tr>
<td>United States</td>
<td>66.8</td>
<td>66.0</td>
<td>65.4</td>
<td>66.0</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>64.6</td>
<td>65.0</td>
<td>63.2</td>
<td>63.0</td>
</tr>
<tr>
<td>Italy</td>
<td>62.1</td>
<td>66.6</td>
<td>61.3</td>
<td>65.6</td>
</tr>
<tr>
<td>Netherlands</td>
<td>63.5</td>
<td>65.5</td>
<td>62.3</td>
<td>65.5</td>
</tr>
<tr>
<td>France</td>
<td>60.0</td>
<td>61.6</td>
<td>60.3</td>
<td>61.6</td>
</tr>
<tr>
<td>Germany</td>
<td>63.3</td>
<td>65.0</td>
<td>63.2</td>
<td>65.0</td>
</tr>
</tbody>
</table>

Source: OECD. Red numbers indicate effective is greater than official.

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### Information Technology Jobs Skew Young

Workforce by age, U.S., 2019

![Bar chart showing IT workforce by age compared to national workforce](Source: Wall Street Journal)

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### What Companies Can Do

- **Pay people more.** This is already happening. Does it grow the total workforce?
- **Search more broadly.** Relax requirements. Look at non-traditional workers. Look outside local area, especially if remote work is feasible.
- **Invest more in training.** Hiring less qualified workers requires more training to bring them up to acceptable skill levels, even if there is a risk they will leave and take work elsewhere.
- **Reconfigure job roles.** Find ways to make existing staff more productive to cover needed functions with existing workers.
- **Recruit future workers.** Connect with middle school-aged people to raise awareness of career opportunities.
- **Automation and outsourcing.**
- **Turning down work.**

---

### What Policymakers Can Do

(But maybe not if they want to get re-elected)

- **Boost retirement age.** Social Security and Medicare need this change eventually anyway.
- **Increase female labor force participation.** More flexibility and a big expansion in child care availability is needed.
- **Fix immigration policy.** Has always been a U.S. strength.
- **Raise teenage participation.** Compatible with college prep?
- **Re-think drug testing policies.** This is quietly happening already.
- **Reconsider occupation licensing requirements.** These make it harder for two-earner couples to migrate to job opportunities.
- **Explore employment of incarcerated population.**

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2020 Economic Outlook Seminar
The Economic Outlook for Montana and the U.S.

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Is the U.S. Economic Expansion Coming to an End?*

- Consumer fundamentals remain sound
- Home building perking up
- Yield inversion is over
- Has the global economy stabilized?
- Manufacturing has contracted all year
- Global environment is fragile
- Trade policy has taken a toll on investment
- Oh yes, isn’t there an election?

*Short answer: Nobody really knows, but probably not

What Happens to Investment in Election Years?*

![Graph showing investment relative to non-election years]

Note: The value "0" represents the level of average investment growth in non-election years.

Source: "Political Uncertainty and Corporate Investment Cycles," Brandmeier and Younglove, 2010

*Short answer: Nothing good.

Consumer Spending is Propelling Recent U.S. Growth

[Graph showing contribution to growth in real gross domestic product, percent]

- Consumption
- NonRes
- Housing
- Inventories
- Trade
- Government

Manufacturing Has Been Contracting
ISM Purchasing Managers Index, Percent

But It Is Really a Global Phenomenon
ISM Purchasing Managers Index, Percent

Source: Economix.com

Source: Economix.com

US-China Trade War Tariffs: An Up-to-Date Chart
Average tariff rate, percent

Tariffs Have Impacted Import Volumes Dramatically

Source: Peterson Institute

U.S. Container Import Growth by Origin, Year over Year Percent Change
**Montana is Highly Exposed to Retaliation**

Average Tariff Rates on Traded Sector Production, by County, 2018


**Global Economic Growth Set to Slow**

Real GDP Growth, Percent, Actual and Predicted, 2019-22

Source: International Monetary Fund

**Mixed Story for Most Important Commodities**

Select Commodity Prices

November 2019 vs. 5-Year High and Low

Source: WorldBank, USDA, Random Lengths

**Copper Prices Closed the Year with Growth**

Last Six Months

Source: Macrotrends.net
Copper Prices Closed the Year with Growth?

Last Year

Source: Macrotrends.net

Copper Prices Closed the Year with Growth??

Last Ten Years

Source: Macrotrends.net

Market for Thermal Coal Has Shrunk Dramatically
Share of Net Electricity Generation by Fuel Type, U.S., percent

Source: U.S. Energy Information Administration

De-Industrialization of U.S. and EU Reflected in CO2 Emissions

Annual CO2 Emissions from Fossil Fuels by Country, 1959-2017
Source: Global Carbon Project
China is the World’s Aluminum Producer
Smelter Production of Aluminum by Country, 2016-18

What We Know About the Montana Economy Today

- Growth since 2016 has continued
- Labor market continues to tighten
- State revenue growth has been good
- Wheat and Calf Prices Down Another 15 Percent
- Dark clouds looming for Powder River basin coal
- Tech is an under-reported good news story
- Gallatin County Now #2 Economy in the State

State Economic Earnings Was Steady in 2018
Percent Growth, Inflation-Corrected Nonfarm Earnings, Montana

Montana Growth is Low by Western Standards
Percent Growth in Real Nonfarm Earnings, 2018

Source: Statista.com
Source: U.S. Bureau of Economic Analysis
Montana’s Relative Economic Performance
Relative Position Among All States and DC, 2019

- Wage Growth (NV)
- Average weekly wages (WA)
- Unemployment Rate (ND)
- GDP growth (WA)
- Job Growth (NV)
- GDP per capita (DC)

Source: howmuch.net

Growth Carried into 2019
Inflation Corrected Earnings Growth FY18-FY19

Source: U.S. Bureau of Economic Analysis

Billings and Non-Urban Counties Performing Better
Change in Inflation-Corrected Wages by County, Montana, Through 2019Q2

Source: U.S. Quarterly Census of Employment and Wages

Another Good Year for State Revenues
General Fund Revenue Sources ($ Millions)
Top Seven Sources

Source: Montana Legislative Fiscal Division
Recent Growth Tilts West/Southwest
Percent Change in Real Wages, 18Q2-19Q2

Tech Underlies the Faster Growth Since 2015
Percent Growth in Earnings Since 2015

Declines in Farm Earnings Are Widespread
Change in Farm Earnings, 2018 vs. 2013, $ Millions

Montana Labor Market Still Tight
Unemployment Insurance Claims, 2017-19

Source: U.S. Bureau of Economic Analysis
Source: Montana Department of Labor and Industry
Outlook for Montana’s Key Industries

- State faces new challenges, but with good momentum
- Closures in Colstrip, coal upheaval will hurt
- Commodity businesses (except palladium) face prospect of price declines
- Federal government spending is good for Montana
- Tech, construction, manufacturing propelling western growth
- Residential construction is the wild card
The Outlook for Cascade County

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Growth in Total Wages Since 2013
Inflation-adjusted Covered Wages, Index, 2013=100

Source: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis

Drivers of Economic Activity
Percent Share of Income in Basic Industries, Cascade County

Finance and Business Services Led Growth in 2018
Growth in Inflation-Corrected Earnings, Cascade County ($ Millions)

Source: U.S. Bureau of Economic Analysis
Growth in Nonfarm Earnings, Cascade County, 2017-2023

Gallatin County Expected to Pace Growth
Average Growth, 2020-23, Percent per Year

The Outlook for Fergus County
Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Growth in Total Wages Since 2013
Inflation-adjusted Covered Wages, Index, 2013=100

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

Source: Bureau of Business and Economic Research

Source: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis
Manufacturing and Business Services Were Bright Spots in 2018

Drivers of Economic Activity
Percent Share of Income in Basic Industries, Fergus County

Gallatin County Expected to Pace Growth
Average Growth, 2020-23, Percent per Year

Source: Bureau of Business and Economic Research
The Outlook for Flathead County

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Drivers of Economic Activity
Percent Share of Income in Basic Industries, Flathead County

<table>
<thead>
<tr>
<th>Industry</th>
<th>2018 Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade - Retail</td>
<td>2%</td>
</tr>
<tr>
<td>Fed. Govt.</td>
<td>12%</td>
</tr>
<tr>
<td>Trade - Wholesale</td>
<td>10%</td>
</tr>
<tr>
<td>Health Care</td>
<td>17%</td>
</tr>
<tr>
<td>Wood Products</td>
<td>6%</td>
</tr>
<tr>
<td>Manufacturin g</td>
<td>15%</td>
</tr>
<tr>
<td>Nonresident travel</td>
<td>20%</td>
</tr>
</tbody>
</table>

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

Growth in Total Wages Since 2013
Inflation-adjusted Covered Wages, Index, 2013=100

Source: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis

Fall Back in Health Care was Dramatic in 2018

<table>
<thead>
<tr>
<th>Industry</th>
<th>2017 Growth</th>
<th>2018 Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction and Manuf.</td>
<td></td>
<td></td>
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<tr>
<td>Retail Whol. Trade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance and Bus. Serv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accommodations &amp; Food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Source: U.S. Bureau of Economic Analysis
The Outlook for Gallatin County

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Growth in Nonfarm Earnings, Flathead County, 2017-2023

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

Gallatin County Expected to Pace Growth
Average Growth, 2020-23, Percent per Year

Source: Bureau of Business and Economic Research

Growth in Total Wages Since 2013
Inflation-adjusted Covered Wages, Index, 2013=100

Source: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis
Drivers of Economic Activity
Percent Share of Income in Basic Industries, Gallatin County

- Ag. And Related, 5%
- Federal Govt., 8%
- Nonresident Travel, 15%
- Manufacturing, 15%
- Trade Ctr., Prof. Services, 17%
- MSU & State Govt., 25%

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

Strong Growth Remained Broadbased in 2018

<table>
<thead>
<tr>
<th>Sector</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction and...</td>
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<tr>
<td>Retail &amp; Whol. Trade</td>
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<td>Finance and Bus. Serv.</td>
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<td>Accommodations &amp; Food</td>
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<td>Government</td>
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<tr>
<td>Mining</td>
<td></td>
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</tr>
<tr>
<td>Other</td>
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</tbody>
</table>

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

Source: U.S. Bureau of Economic Analysis

Gallatin County Expected to Pace Growth
Average Growth, 2020-23, Percent per Year

Source: Bureau of Business and Economic Research
The Outlook for Hill County

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Drivers of Economic Activity
Percent Share of Income in Basic Industries, Hill County

<table>
<thead>
<tr>
<th>Industry</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Fed. Govt., 13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Govt., 13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel, Other, 13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ag. &amp; Related, 26%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Railroad, 34%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Government Contraction Dominates Growth in 2018

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

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

Source: U.S. Bureau of Economic Analysis
The Outlook for Lewis and Clark County

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Growth in Total Wages Since 2013
Inflation-adjusted Covered Wages, Index, 2013=100

Source: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis
Drivers of Economic Activity
Percent Share of Income in Basic Industries, Lewis and Clark County

- State Government, 53%
- Manufacturing, 5%
- Federal, 19%
- Federal, 12%
- Utilities, 9%
- Retail, 6%
- Construction and Manufacturing, 5%
- Transportation and Information, 2%
- Ag. & Mining, 2%

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

Growth in Nonfarm Earnings, Lewis and Clark County, 2017-2023


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

Government Declines Mask Growth Elsewhere in 2018

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

Growth in Inflation-Corrected Earnings, Lewis and Clark County ($ Millions)

Source: U.S. Bureau of Economic Analysis

Gallatin County Expected to Pace Growth
Average Growth, 2020-23, Percent per Year

Source: Bureau of Business and Economic Research
The Outlook for Missoula and Ravalli Counties

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Drivers of Economic Activity
Percent Share of Income in Basic Industries, Missoula County

- Nonresident Travel, 9%
  Transportation, 6%
  Trade Ctr. Other Services, 12%
  Trade Ctr., Medical, 15%
  Federal Govt., 12%
  UM & Other State Govt., 23%

- Other Basic, 2%
- Wood and Paper, 6%

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

Drivers of Economic Activity
Percent Share of Income in Basic Industries, Ravalli County

- Ag And Mining, 5%
  Transportation, 6%
  Trade Ctr. Other Services, 12%
  Government, 7%
  Medical Research, 16%

- Other, 8%
- Commuters, 55%

Source: U.S. Bureau of Economic Analysis and BEA
Business Services Has Led Growth for the Last Two Years

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

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

Source: U.S. Bureau of Economic Analysis

Growth in Nonfarm Earnings, Missoula County, 2017-2023

- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023

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

Gallatin County Expected to Pace Growth

Average Growth, 2020-23, Percent per Year

Source: Bureau of Business and Economic Research
The Outlook for Silver Bow County

Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

Growth in Total Wages Since 2013
Inflation-adjusted Covered Wages, Index, 2013=100

Mining Earnings Volatility Continues to Dominate

Drivers of Economic Activity
Percent Share of Income in Basic Industries, Silver Bow County

Source: U.S. Bureau of Economic Analysis

Source: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis
Growth in Nonfarm Earnings, Silver Bow County, 2017-2023

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

---

Gallatin County Expected to Pace Growth
Average Growth, 2020-23, Percent per Year

Source: Bureau of Business and Economic Research

---

The Outlook for Yellowstone County
Patrick M. Barkey, Director
Bureau of Business and Economic Research
University of Montana

---

Growth in Total Wages Since 2013
Inflation-adjusted Covered Wages, Index, 2013=100

Source: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis
2020 Hindsight
Travel & Recreation
Trends and Outlook

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

Hindsight is 20/20
If we had only known!

Tourism & Recreation
Challenges & Opportunities

1 WORST SUMMER YET FOR SEASONAL STAFFING SHORTAGE
September 22, 2019 at 5:00 am | By BRET ANNE

Employee Shortage Causes Bozeman Taco John's to Close
Daily Inter Lake

HELP WANTED

1 Difficulty in finding Workers
Finding quality year-round employees is becoming more difficult

Finding quality seasonal employees is becoming more difficult

Agree  Neither Agree/Disagree  Disagree

0% 10% 20% 30% 40% 50% 60% 70% 80% 90%
1 Tourism Businesses solutions

- Pray
- Training
- Hire retirees
- Higher wages
- Hire J-1 workers
- Use contractors
- Provide benefits
- Broader advertising
- Keep business a sustainable size
- Be good employer – flexible start/end times

2 Short Term Rentals

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>8%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>2018</td>
<td>8%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>2019</td>
<td>8%</td>
<td>7%</td>
<td>8%</td>
</tr>
</tbody>
</table>

3 Aquatic Invasive Species

- $76.7 million in revenue for fishing outfitters

The environment, economy, recreation, tourism, and humans are all impacted by the introduction of aquatic invasive species.

4 Overcrowding vs Lagging Visitation

64% of all non-resident spending is in the regions where Glacier & Yellowstone reside.
5 Feral Pigs are Coming

6 Chronic Wasting Disease Mgmt. Zones

7 Airline growth

Nonresident visitation

- 12.6 Million in 2019
- 2% increase over 2018
**Business Owners**

2019 Volume Increase; Expected in 2020

- **Glacier Country**
  - 56% were up in 2019
  - 61% expect increases in 2020

- **Central & Missouri River Regions**
  - 44% were up in 2019
  - 51% expect increases in 2020

- **SE Montana**
  - 55% were up in 2019
  - 78% expect increases in 2020

- **SW Montana**
  - 51% were up in 2019
  - 67% expect increases in 2020

- **Yellowstone Country**
  - 50% were up in 2019
  - 53% expect increases in 2020

---

**Thank you!**

[www.itrr.umt.edu](http://www.itrr.umt.edu)

norma.nickerson@mso.umt.edu
Health Care

Dr. Robert Sonora
Associate Director | Director Health Research
Bureau of Business and Economic Research
Senior Research Professor
University of Montana

Waste in health care

Table 2. Cost Estimates by Waste Domain

<table>
<thead>
<tr>
<th>Domain</th>
<th>Costs, $/M Billion</th>
<th>Annual Estimates</th>
<th>Total Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure of Care Delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital-acquired conditions and adverse events</td>
<td>5.7-46.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic-related inefficiencies (variability in care, inefficient use of high-cost physicians)</td>
<td>3.0</td>
<td>102.4-165.7</td>
<td></td>
</tr>
<tr>
<td>Loss of adoption of preventive care practices (e.g., vaccines, diabetes, hypertension)</td>
<td>88.6-111.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure of Care Coordination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate admissions and avoidable complications</td>
<td>5.9-56.3</td>
<td>27.2-78.7</td>
<td></td>
</tr>
<tr>
<td>Readmissions</td>
<td>21.25-21.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overprescription or Low-Value Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-value medication cost</td>
<td>14.4-29.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-value screening, testing, or procedures</td>
<td>17.2-27.9</td>
<td>75.7-101.2</td>
<td></td>
</tr>
<tr>
<td>Overage of end-of-life care</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pricing Failure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicare pricing failure</td>
<td>169.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital-based health services pricing failure</td>
<td>31.4-61.2</td>
<td>236.7-240.5</td>
<td></td>
</tr>
<tr>
<td>Laboratory and ambulatory pricing</td>
<td>26.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraud and Abuse</td>
<td>56.5-63.9</td>
<td>58.5-83.9</td>
<td></td>
</tr>
<tr>
<td>Administrative Complexity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Billing and coding waste</td>
<td>248</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician time spent reporting on quality measures</td>
<td>17.6</td>
<td>265.6</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>760.915</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“Am-Medi-stan” is growing: 5th largest global economy


Forecast Trend
US Expenditure and Life Expectancy

Health Expenditure and Life Expectancy: OECD

Health Expenditure and Life Expectancy: OECD

Health Expenditure and Infant Mortality: OECD
Health Expenditure and Infant Mortality: OECD

Health Care Impacts

US: Chapter 7 and % Uninsured

MT: Chapter 7 and % Uninsured

Nationally, 66% personal bankruptcy due to medical reasons
Health care and foreclosure

- 13% of foreclosures due to medical expenses and illness
- Uninsured more likely to go into foreclosure

Medicaid extension passed, HB0658

- BBER study: 2016 – 2020
  - $1.6 billion economic impact
  - 6,000 jobs
- Additional requirements
  - Work, education, caretaker, increase in premiums and paperwork
  - Expected ≈ 4,000 Montanans lose coverage (4%) → could reduce economic impact

Percent private firms offer insurance, 2018

(source: Kaiser Family Foundation)
MT: Health Care, Real GSP, Population

Healthcare share of household expenditures, percent

Cumulative growth by sector from 20__ to 2018

<table>
<thead>
<tr>
<th>Health “Score Card”</th>
<th>US</th>
<th>Montana</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Children Immunized</td>
<td>70.4%</td>
<td>66.2%</td>
</tr>
<tr>
<td>Smoking</td>
<td>16.4%</td>
<td>17.2%</td>
</tr>
<tr>
<td>Alcohol Dependence</td>
<td>5.8%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Opioid Misuse</td>
<td>4.3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Life Expectancy (years)</td>
<td>78.7</td>
<td>78.6</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>73.4%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Adult Obesity</td>
<td>65.4%</td>
<td>62.2%</td>
</tr>
<tr>
<td>Infant Mortality (per 1,000)</td>
<td>5.9</td>
<td>5.8</td>
</tr>
<tr>
<td>Heart Disease (per 100,000)</td>
<td>165.0</td>
<td>155.0</td>
</tr>
<tr>
<td>Diabetes (per 100,000)</td>
<td>21.5</td>
<td>21.6</td>
</tr>
<tr>
<td>Firearms (per 100,000)</td>
<td>12.0</td>
<td>22.5</td>
</tr>
<tr>
<td>Suicide (per 100,000)</td>
<td>14.0</td>
<td>28.9</td>
</tr>
<tr>
<td>Cancer (per 100,000)</td>
<td>152.5</td>
<td>152.6</td>
</tr>
<tr>
<td>Hypertension</td>
<td>32.4%</td>
<td>29.0%</td>
</tr>
<tr>
<td>Hospital inpatient expenses/day</td>
<td>$2,424</td>
<td>$1,070</td>
</tr>
</tbody>
</table>

(Source: Kaiser Family Foundation, greened better/worse than national average)
MT: Urban-Rural Divide

<table>
<thead>
<tr>
<th></th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-Adjusted Mortality (per 1,000)</td>
<td>349.0</td>
<td>348.6</td>
</tr>
<tr>
<td>Infant Mortality Rate (per 1,000)</td>
<td>5.4</td>
<td>8.0</td>
</tr>
<tr>
<td>% Frequent Physical Distress</td>
<td>10.3</td>
<td>10.8</td>
</tr>
<tr>
<td>% Frequent Mental Distress</td>
<td>10.7</td>
<td>11.1</td>
</tr>
<tr>
<td>% Diabetic</td>
<td>8.0</td>
<td>9.2</td>
</tr>
<tr>
<td>% Food Insecure</td>
<td>12.7</td>
<td>12.5</td>
</tr>
<tr>
<td>% Uninsured</td>
<td>14.2</td>
<td>19.0</td>
</tr>
<tr>
<td>Costs</td>
<td>$7,616</td>
<td>$7,708</td>
</tr>
<tr>
<td>Firearm Fatalities Rate (per 1,000)</td>
<td>20.1</td>
<td>28.6</td>
</tr>
</tbody>
</table>

Urban = <35% rural and Rural = >75% rural

- average age in MT is 40
- Median real per capita income in MT is $46k

ACA premium Gold with 40 yr old with income $40,000

Change in Lowest-Cost Metal Plan Before and After Tax Credit, 2019-2020

- ACA premium Gold with 40 yr old with income $40,000

Thank You

robert.sonora@mso.umt.edu
www.bber.umt.edu
High-tech & Startups

Christina Henderson, Executive Director
Katy Spence, Communications Director
MTHighTech.org

2020 Outlook for Montana High-tech

Record Revenue, Jobs and Venture Capital Investment

Montana’s high-tech sector

$ More than $2 billion in annual revenue
Growing 9x the Montana economy
Pays 2x the median wage, $65,000+
600+ firms

Surveying Montana high-tech firms since 2014.
What is high-tech?

Make or sell high-tech products
Professional services related to high tech
E-commerce
Advanced manufacturing

Top Montana Tech Subsectors

- Software
- Consulting
- Marketing
- Manufacturing
- Professional Services
- Biotech

Locations of High-Tech & Manufacturing Firms

Tech leaders say...

Biggest benefit of Montana = quality of life
Biggest barrier to growth = access to talent
Venture capital increased 10x in 5 years

2015
Montana dead last in VC dollars per capita, behind Puerto Rico

2019
More than $100 million invested

Key Trends Driving Montana’s Innovation Economy
1. Technological
2. Social
3. Economic

Technological

Reduced geographic barriers to growth

Affordability of starting and scaling company

onX Maps
- Missoula outdoor technology company
- Founded by MSU grad Eric Siegfried in 2009 with $500
- $20+ million funding in 2018
- CEO Laura Orvidas a 17-year veteran of Amazon
MyVillage

- Tech-enabled childcare company
- Co-founded by new mom Erica Mackey in 2017
- Raised largest seed round in MT history in 2019 (nearly $6M)
- Led a venture-backed startup in Africa, ultimately chose Bozeman

Social

Work/life balance important to younger generations

Knowledge workers like college towns with outdoor amenities

Economic

Sale of Bozeman’s RightNow to Oracle for $1.8 billion in 2012

Strong entrepreneurial ecosystem

Montana named #1 state for startup activity from 2013-2016
Montana Advantages

- Strong entrepreneurial support networks
- Excellent workers, high retention
- Elected leaders “champions of entrepreneurship”
- Montana values (work ethic, tolerance for risk) aligned with entrepreneurship
iResponse

- Box Elder, Rocky Boy Reservation
- Founded in 2016
- Cree-owned
- Section 106 consultation
- Work with clients in US and Canada on tribal and ancestral lands
- 12+ employees

Spika Design & Manufacturing

- Lewistown
- Founded in 2011
- Woman-led, family-owned
- Aviation maintenance equipment
- International exports
- Military contracts
- 2016 expansion

Big Sky
Ascent Vision Technologies

- Bozeman
- Founded in 2013
- Veteran-owned
- 120+ employees with Bridger Aerospace
- New Belgrade facility in 2017
- Government contracting
- International work

Inimmune

- Missoula
- Founded by former GSK employees in 2016
- Partnership with University of Montana
- NIH contracts
- Grant funding
- Montana Bioscience Alliance

Billings

Zoot Enterprises

- Bozeman and Billings
- Founded in 1990
- FinTech
- 250+ employees
- Impact on Four Corners
- On-site childcare
- Community involvement
GTUIT

- Billings
- Founded in 2011
- 45+ employees
- Small-scale mobile natural gas processing systems
- 2016 Inc. 5000 list
- Recent expansions into more national and international operations

Kampgrounds of America

- Billings
- Founded in 1962
- Woman-led
- 75+ employees
- Independently-owned and operated campgrounds
- Proprietary reservation and management software
- Digital marketing

Bozeman

PFL

- Livingston and Indianapolis
- Founded in 1996
- 300+ employees
- Tactile marketing technology
- Goldman Sachs $25M investment in 2018
- National awards and recognition
Zoot Enterprises
- Bozeman and Billings
- Founded in 1990
- FinTech
- 250+ employees
- Impact on Four Corners
- On-site childcare
- Community involvement

Ascent Vision Technologies
- Bozeman
- Founded in 2013
- Veteran-owned
- 120+ employees with Bridger Aerospace
- New Belgrade facility in 2017
- Government contracting
- International work

Butte

Montana Precision Products
- Butte
- Founded in 2012
- 170+ employees
- Joint venture between GE and SeaCast
- Aerospace manufacturing
- BSTF grant – ongoing employment growth
Ascent Vision Technologies

- Bozeman
- Founded in 2013
- Veteran-owned
- 120+ employees with Bridger Aerospace
- New Belgrade facility in 2017
- Government contracting
- International work

Inimmune

- Missoula
- Founded by former GSK employees in 2016
- Partnership with University of Montana
- NIH contracts
- Grant funding
- Montana Bioscience Alliance

Great Falls

Loenbro

- Black Eagle
- Founded in 1998
- 500+ employees
- Suite of companies – construction, inspection, plumbing/heating, electrical, and more
- Primarily oil and gas clients
D.A. Davidson
- Great Falls
- Founded in 1935
- Locations across Montana and the U.S.
- Employee-owned financial services holding company
- Technology Team helps clients navigate evolving landscape

Vision Net
- Great Falls, Billings, Missoula, Helena
- Founded in 1995
- Rural broadband, IoT, and communications technology
- New network provider for ~160 First Interstate Bank locations

Ascent Vision Technologies
- Bozeman
- Founded in 2013
- Veteran-owned
- 120+ employees with Bridger Aerospace
- New Belgrade facility in 2017
- Government contracting
- International work

Havre
Inimmune

- Missoula
- Founded by former GSK employees in 2016
- Partnership with University of Montana
- NIH contracts
- Grant funding
- Montana Bioscience Alliance

Figure

- Helena and Bozeman
- Locations in CA and UT
- Founded in 2018
- 100+ employees
- FinTech utilizing and creating blockchain
- $50M in 2018 seed round; $65M 2019 Series B; $103M 2019 Series C

Montana Youth Apprenticeship Partnership

- Part of federal PAYA initiative – received $150K grant
- Aimed to train and build skilled workforce
- Goal to increase completed MT apprenticeships by 2.6% by 2025
- Pilot programs in Billings and Helena
- 30+ partner organizations
Kalispell

Applied Materials
- Kalispell, plus more locations around the world
- Founded in 1967
- 500 MT employees
- Global semiconductor and display manufacturing equipment
- Community involvement

ExcelliMatrix
- Kalispell and Bozeman
- Founded in 2013
- International teams
- ~30 employees
- Custom software solutions, app development, and consulting
- Partnership with Wildfire Defense Systems

Neuro-ID
- Whitefish
- Founded in 2015
- 20+ employees with plans to hire
- Prescriptive analytics for the risk industry
- Patented software
- Partnership with Zoot
- $8M in private funding
**Lewistown**

**Allied Steel**
- Lewistown
- Founded in 1980
- 100+ MT employees
- Structural steel manufacturer
- Passionate about rural Montana lifestyle
- High employee retention

**Ascent Vision Technologies**
- Bozeman
- Founded in 2013
- Veteran-owned
- 120+ employees with Bridger Aerospace
- New Belgrade facility in 2017
- Government contracting
- International work

**Inimmune**
- Missoula
- Founded by former GSK employees in 2016
- Partnership with University of Montana
- NIH contracts
- Grant funding
- Montana Bioscience Alliance
Missoula

LMG Security
- Missoula
- Founded in 2009
- Woman-owned
- Cybersecurity consulting and training
- Featured in national news outlets
- Conducted workshops for the DoD, American Bar Association, and more

LumenAd
- Missoula
- Founded in 2014
- 60 employees
- Digital marketing software and services
- Named the 29th fastest-growing company on the 2019 Inc. 5000
- Named 4th on Inc.’s list of Top Software companies in 2019

Inimmune
- Missoula
- Founded by former GSK employees in 2016
- Partnership with University of Montana
- NIH contracts
- Grant funding
- Montana Bioscience Alliance
Christina Henderson
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@MontanaHighTech

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Katy Spence
Communications Director
katy.spence@mthightech.org
@MontanaHighTech

www.MTHighTech.org/jobs

Additional resources

- Helena WINS
- Two Bear Capital
- Montana Bioscience Alliance
- Photonics Industry Alliance
- Montana Telecommunications Association

Sources

- Kauffman Index of Startup Activity
- A Profile of Montana’s High Tech Industries (2019)
- Bozeman Daily Chronicle
- Missoula Current
- ParentMap
- Slikati
- Data Connectors
- National Venture Capital Association
- MHTBA website
- Member company websites
Montana Manufacturing and Forest Industry Conditions and 2020 Outlook

Todd A. Morgan, CF

U.S. Manufacturing

MT vs. U.S. Manufacturing Output

MT Manufacturing Shipments
### Retaliatory Tariff Impacts on MT Manufacturers’ Exports

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>8%</td>
<td>92%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>7%</td>
<td>93%</td>
</tr>
<tr>
<td>Textiles, Clothes, Leather</td>
<td>5%</td>
<td>95%</td>
</tr>
<tr>
<td>Wood &amp; Paper</td>
<td>6%</td>
<td>94%</td>
</tr>
<tr>
<td>Petroleum, Coal, Chemicals, Plastics, Nonmetallic minerals</td>
<td>4%</td>
<td>96%</td>
</tr>
<tr>
<td>Fabricated metal</td>
<td>6%</td>
<td>94%</td>
</tr>
<tr>
<td>Machinery &amp; Equipment</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>17%</td>
<td>83%</td>
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</table>

### U.S. Tariff Impacts on MT Manufacturers’ Input Costs

<table>
<thead>
<tr>
<th>Category</th>
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<th>No</th>
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</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Textiles, Clothes, Leather</td>
<td>61%</td>
<td>39%</td>
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<tr>
<td>Wood &amp; Paper</td>
<td>27%</td>
<td>73%</td>
</tr>
<tr>
<td>Petroleum, Coal, Chemicals, Plastics, Nonmetallic minerals</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Fabricated metal</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Machinery &amp; Equipment</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>45%</td>
<td>55%</td>
</tr>
</tbody>
</table>

### MT vs. U.S. Durable Goods Manufacturing Output

*Graph showing the index from 2001 to 2017 for MT and U.S. durable goods.*

### MT vs. U.S. Nondurable Goods Manufacturing Output

*Graph showing the index from 2001 to 2017 for MT and U.S. nondurable goods.*
## MT Manufacturing Growth: Adult Beverages

<table>
<thead>
<tr>
<th>Sector</th>
<th>2018 Employees</th>
<th>Average (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breweries:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>979</td>
<td>18</td>
<td>217%</td>
</tr>
<tr>
<td>Number Firms</td>
<td>87</td>
<td>18</td>
<td>211%</td>
</tr>
<tr>
<td>Total Income (thousands)</td>
<td>$20,815</td>
<td>19</td>
<td>230%</td>
</tr>
<tr>
<td>Wineries:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>65</td>
<td>17</td>
<td>195%</td>
</tr>
<tr>
<td>Number Firms</td>
<td>12</td>
<td>8</td>
<td>71%</td>
</tr>
<tr>
<td>Total Income (thousands)</td>
<td>$1,020</td>
<td>21</td>
<td>272%</td>
</tr>
<tr>
<td>Distilleries:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>152</td>
<td>29</td>
<td>485%</td>
</tr>
<tr>
<td>Number Firms</td>
<td>17</td>
<td>16</td>
<td>183%</td>
</tr>
<tr>
<td>Total Income (thousands)</td>
<td>$3,409</td>
<td>33</td>
<td>652%</td>
</tr>
</tbody>
</table>

## MT Manufacturing Employment Growth by Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employees</th>
<th>Growth 2007-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>3,193</td>
<td>-3.9% -35.6%</td>
</tr>
<tr>
<td>Machinery</td>
<td>1,401</td>
<td>-1.2% -12.8%</td>
</tr>
<tr>
<td>Printing &amp; related support*</td>
<td>1,229</td>
<td>-0.8% -8.1%</td>
</tr>
<tr>
<td>Furniture &amp; related</td>
<td>1,194</td>
<td>-0.3% -3.5%</td>
</tr>
<tr>
<td>Food*</td>
<td>3,062</td>
<td>0.3% 3.4%</td>
</tr>
<tr>
<td>Nonmetallic mineral</td>
<td>1,507</td>
<td>2.3% 28.9%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3,181</td>
<td>2.4% 30.5%</td>
</tr>
<tr>
<td>Petroleum &amp; coal*</td>
<td>1,329</td>
<td>2.7% 34.1%</td>
</tr>
<tr>
<td>Fabricated metal</td>
<td>3,038</td>
<td>3.9% 53.0%</td>
</tr>
<tr>
<td>Beverage &amp; tobacco*</td>
<td>1,421</td>
<td>5.7% 84.1%</td>
</tr>
</tbody>
</table>

## MT Manufacturing Worker Shortages

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes in 2016</th>
<th>Yes in 2017</th>
<th>Yes in 2018</th>
<th>Yes in 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Manufacturing</td>
<td>31%</td>
<td>71%</td>
<td>23%</td>
<td>27%</td>
</tr>
<tr>
<td>Wood Products</td>
<td>29%</td>
<td>81%</td>
<td>26%</td>
<td>35%</td>
</tr>
<tr>
<td>Chemical/refining/metallic products</td>
<td>39%</td>
<td>67%</td>
<td>14%</td>
<td>22%</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>30%</td>
<td>84%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Machinery/equipment</td>
<td>20%</td>
<td>70%</td>
<td>18%</td>
<td>38%</td>
</tr>
<tr>
<td>All other manufacturing</td>
<td>41%</td>
<td>63%</td>
<td>27%</td>
<td>18%</td>
</tr>
</tbody>
</table>

## MT Manufacturing Workers 2019...

- Not enough applicants: 12%
- No job openings in 2019: 23%
- Not enough **qualified** applicants: 50%

Salary & benefits demanded by applicants were not seen as issues by manufactures during 2019.

Most have NOT worked with a local school, community college, or university in past 5 years to develop workforce or train employees.
### MT Manufacturing Worker Outlook

<table>
<thead>
<tr>
<th></th>
<th>Decrease in 2020</th>
<th>Stay the same</th>
<th>Increase in 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>3%</td>
<td>63%</td>
<td>34%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>0%</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>Textiles, Clothes, Leather</td>
<td>0%</td>
<td>74%</td>
<td>26%</td>
</tr>
<tr>
<td>Wood &amp; Paper</td>
<td>6%</td>
<td>71%</td>
<td>23%</td>
</tr>
<tr>
<td>Petroleum, Coal, Chemicals, Plastics, Nonmetallic minerals</td>
<td>2%</td>
<td>65%</td>
<td>33%</td>
</tr>
<tr>
<td>Fabricated metal</td>
<td>6%</td>
<td>70%</td>
<td>24%</td>
</tr>
<tr>
<td>Machinery &amp; Equipment</td>
<td>0%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0%</td>
<td>48%</td>
<td>52%</td>
</tr>
</tbody>
</table>

### MT Manufacturing Workers: 3-year Outlook...

- No job openings expected: 20%
- Not enough applicants: 33%
- Not enough qualified applicants: 64%

Salary and/or benefits demanded by applicants are expected to be more of an issue by manufacturers in coming years.

### MT Manufacturing 2020 Outlook

<table>
<thead>
<tr>
<th></th>
<th>Worse</th>
<th>Same</th>
<th>Better</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>3%</td>
<td>42%</td>
<td>55%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>0%</td>
<td>28%</td>
<td>72%</td>
</tr>
<tr>
<td>Textiles, Clothes, Leather</td>
<td>0%</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>Wood &amp; Paper</td>
<td>3%</td>
<td>59%</td>
<td>38%</td>
</tr>
<tr>
<td>Petroleum, Coal, Chemicals, Plastics, Nonmetallic minerals</td>
<td>4%</td>
<td>37%</td>
<td>59%</td>
</tr>
<tr>
<td>Fabricated metal</td>
<td>9%</td>
<td>44%</td>
<td>47%</td>
</tr>
<tr>
<td>Machinery &amp; Equipment</td>
<td>0%</td>
<td>43%</td>
<td>57%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0%</td>
<td>46%</td>
<td>54%</td>
</tr>
</tbody>
</table>

### Montana’s Wood Products Facilities

- ~125 establishments
- ~70 timber users
- 8 larger, 20+ small sawmills
- Plywood, MDF, particleboard
- Log homes, post & pole, chipping
- Pellets, bark, fuels-for-schools

- Mostly small, privately held
- Most don’t own forest land
- Nearly all rely on timber from public lands
Montana Wood & Paper Manufacturing

- **Earnings**
- **Employment**

**Revenue (Million $)**
- 2005: 350
- 2007: 350
- 2009: 250
- 2011: 200
- 2013: 200
- 2015: 200
- 2017: 200
- 2019: 150

**Jobs**
- 2005: 6,000
- 2007: 6,000
- 2009: 5,000
- 2011: 4,000
- 2013: 4,000
- 2015: 4,000
- 2017: 4,000
- 2019: 3,000

Sources: Bureau of Economic Analysis, Western Wood Products Association, BBER. *2019 Estimated.

---

Montana Forest Industry (Private Sector)

<table>
<thead>
<tr>
<th>Year</th>
<th>Workers (mills &amp; forest)</th>
<th>Earnings (millions)</th>
<th>Primary sales (millions)</th>
<th>Lumber production (MMBF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>10,006</td>
<td>$508</td>
<td>$1,577</td>
<td>985</td>
</tr>
<tr>
<td>2010</td>
<td>7,030</td>
<td>$305</td>
<td>$516</td>
<td>503</td>
</tr>
<tr>
<td>2019*</td>
<td>8,022</td>
<td>$365</td>
<td>$520</td>
<td>480</td>
</tr>
</tbody>
</table>

Sources: Bureau of Economic Analysis, Western Wood Products Association, BBER. *2019 estimated.

---

National Forest Timber in Montana

- **Cut**
- **Sold**

**Million board feet, Scribner**
- '00: 100
- '05: 200
- '10: 150
- '15: 100
- '19: 200

Source: USDA Forest Service.

---

Pending Timberland Sale

- **Weyerhaeuser**

- 630,000 acres
- $145 million
- 2nd quarter 2020
- Mostly in northwestern Montana
- to Southern Pine Plantations
Canadian Lumber
Volume & share of US market down 3 years

Tariffs & CAN mills in US are having an impact.

Beetles & fires reduced BC timber & lumber supply.

Russia passed CAN as world's largest softwood lumber exporter in 2019.

Thank you!

todd.morgan@business.umt.edu
www.BBER.umt.edu/FIR
The Outlook for Real Estate and Construction

Brandon Bridge
Economist and Director of Forecasting
Bureau of Business and Economic Research
University of Montana

Reasons for Optimism?

- Strong volumes nationally
- Steady price increases
- Mortgage risk subsiding
- Positive industry sentiment
- 2018 volumes down
- 2019 volumes looking stronger
- Bifurcated market
- Affordability getting worse
- Tight inventories

Strong Housing Price Growth Since 2011
FHFA Housing Price Index, U.S., 1995=100

Source: Federal Housing Finance Agency

National Price Growth Not Evenly Distributed Across Price Tiers

Source: AEI Center on Housing Markets and Finance
**Volumes Rising**

Fergus County Market Statistics

- Number of Sales
- Median Sale Price

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Sales</th>
<th>Median Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>120</td>
<td>$110,000</td>
</tr>
<tr>
<td>2012</td>
<td>130</td>
<td>$120,000</td>
</tr>
<tr>
<td>2013</td>
<td>140</td>
<td>$130,000</td>
</tr>
<tr>
<td>2014</td>
<td>150</td>
<td>$140,000</td>
</tr>
<tr>
<td>2015</td>
<td>160</td>
<td>$150,000</td>
</tr>
<tr>
<td>2016</td>
<td>170</td>
<td>$160,000</td>
</tr>
<tr>
<td>2017</td>
<td>180</td>
<td>$170,000</td>
</tr>
<tr>
<td>2018</td>
<td>190</td>
<td>$180,000</td>
</tr>
</tbody>
</table>

**Markets Looking Healthier**

Hill County Market Statistics

- Number of Sales
- Median Sale Price

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Sales</th>
<th>Median Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>120</td>
<td>$110,000</td>
</tr>
<tr>
<td>2012</td>
<td>130</td>
<td>$120,000</td>
</tr>
<tr>
<td>2013</td>
<td>140</td>
<td>$130,000</td>
</tr>
<tr>
<td>2014</td>
<td>150</td>
<td>$140,000</td>
</tr>
<tr>
<td>2015</td>
<td>160</td>
<td>$150,000</td>
</tr>
<tr>
<td>2016</td>
<td>170</td>
<td>$160,000</td>
</tr>
<tr>
<td>2017</td>
<td>180</td>
<td>$170,000</td>
</tr>
<tr>
<td>2018</td>
<td>190</td>
<td>$180,000</td>
</tr>
</tbody>
</table>

**Home Price Appreciation Since 2012 by Market Segment**

- US: 39% (Entry-Level), 31% (Move-up)
- MT: 44% (Entry-Level), 29% (Move-up)
- Gallatin: 52% (Entry-Level), 21% (Move-up)
- Flathead: 32% (Entry-Level), 18% (Move-up)
- Cascade: 22% (Entry-Level), 23% (Move-up)

**Median Price-to-Income Ratio for Entry-Level Homes**

- Silver Bow: 2.8 (2012), 2.6 (2018)
- Gallatin: 3.4 (2012), 3.6 (2018)
- Flathead: 3.6 (2018)
New Construction by Market Segment: Lewis & Clark County

New Construction by Market Segment: Missoula County

New Construction by Market Segment: Yellowstone County

Looking Ahead to 2020

- Interest Rates Likely to Remain Low
Mortgage Rates Looking to Bottom Out

- Interest rates likely to remain low
- Real estate risk may be subsiding

Looking Ahead to 2020

- Interest rates likely to remain low
- Real estate risk may be subsiding
- Home builder sentiment indicates positive outlook
Positive Builder Sentiment
NAHB Home Builder Traffic of Prospective Buyers

Outlook for 2020

- Real estate markets in Montana will remain strong
- Low interest rates will continue to drive demand
- Affordability will get worse, particularly for entry-level homes
- Lowered market risk will boost optimism

Source: National Association of Home Builders

Questions?
2018 Montana Agricultural Year in Review

Kate Binzen Fuller
Assistant Professor/Extension Specialist
George W. Haynes
Professor/Extension Specialist
Department of Agricultural Economics & Economics
MSU Extension

Compared to a year ago, Montana farmers’ operations are...

- Better Off: 54% in 2018, 4% in 2019
- Worse Off: 33% in 2018, 12% in 2019
- About the Same: 42% in 2018, 56% in 2019

In the next 12 months, Montana farmers financially will be...

- Better off: 52% in 2018, 10% in 2019
- Worse off: 36% in 2018, 11% in 2019
- Stay same: 38% in 2018, 53% in 2019

Would you say that your farm operation today is better off, worse off or about the same compared to a year ago?

- Better Off: 54% in 2018, 4% in 2019
- Worse Off: 50% in 2018, 7% in 2019
- About the Same: 42% in 2018, 10% in 2019

Do you think that a year from now your farm operation will be better off financially, worse off, or about the same as now?

- Better off: 52% in 2018, 10% in 2019
- Worse off: 26% in 2018, 31% in 2019
- Stay same: 29% in 2018, 45% in 2019

Montana June Ag Barometer
Montana August Ag Barometer
Percentage of Value-Added from Agriculture

- Lewistown
- Havre
- Kalispell
- Butte
- Bozeman
- Billings
- Missoula
- Great Falls
- Helena

Sept. 2019 Drought Map

November 2019 Drought Map

Prices: Slight Harvest Rally
What Happened in the Late Spring?

- Corn price increase
  - Calves a more costly investment
- Kansas beef packing plant fire

...And why are prices still low?

- Drought in southern states
- Snowstorm in Midwest in early October
- Larger numbers of feeders on the market
  - Replacements not being held back
Montana Grain Prices ($2018)

Source: NASS Quickstats

Montana Pulse Production

Source: NASS Quickstats

Montana Pulse Prices ($2018)

Source: NASS Quickstats

TRENDS IN THE GREATER AG ECONOMY
Net farm income and net cash farm income, 2000-19F

$ billion (2019)

- Net farm income (NFCI)
- 2000-18 average NFCI
- 2000-18 average NFI

Note: F = forecast. Values are adjusted for inflation using the chain-type GDP deflator, 2019=100.

2019 Farm Real Estate Value by State
Dollars per Acre and Percent Change from 2018

Domestic Production Conditions:
Winter (JFM) Precip. Forecast

Delinquency Rates at Commercial Banks

Percent

- Non-Real Estate Farm Loans*
- Farm Real Estate Loans*
- All Bank Loans**

* Includes the share of all past due, nonaccrual, and net charge-off loans.
** All bank loans include all loans made at commercial banks. Q2 not yet available/reported as Q1 figure.
Source: Kansas City Federal Reserve U.S. Agricultural Outlook, Aug 2019
Domestic Production Conditions: Winter (JFM) Temp. Forecast

Questions

kate.fuller@montana.edu
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Sibanye-Stillwater is engaged in the development, extraction and processing of PGMs from a geological formation in south-central Montana known as the J-M Reef, which is the only known significant source of PGMs in the US and the highest-grade PGM deposit known in the world. Sibanye-Stillwater is also one of the world’s largest global recyclers of PGMs derived from spent catalytic converters. The majority of the company’s PGMs are used in catalytic converters to reduce vehicle air emissions.

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At Sibanye-Stillwater, we believe our mining improves lives. We are committed to creating superior value for all of our stakeholders, including employees, suppliers and communities.

- Over 1,750 Montana employees
- Over $16.8 million in local taxes annually
- Over $170 million annual payroll costs
- Over $40 million in annual employee taxes
- Over $490 million in total annual purchases
- Over $55,000 in scholarships awarded
- Nearly $400,000 in charitable contributions annually with focus on rural emergency and healthcare services, STEM education, local community improvement activities and environmental stewardship

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- Leading low-cost PGM producer
- Nearly 600,000 ounces mined in 2018
- Approximately 13 million total ounces PGMs produced historically
- Over 25 million ounces proven and probable reserves (78% palladium and 22% platinum)

COLUMBUS METALLURGICAL COMPLEX
- Includes smelter, base metal refinery and analytical laboratory
- Nearly 690,000 ounces of PGMs recycled in 2018
- Record nearly 1.3 million ounces processed in 2018
- Consistently less than 5% of operating permit air emissions limits at the smelter

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Our legacy of Building a Strong America® began in 1924 when we brought energy to towns on the Montana-North Dakota border. Today, from our headquarters in Bismarck, North Dakota, we operate in 45 states, delivering energy and providing construction materials and services. We power homes, businesses and industry with electricity and natural gas. We connect homes, factories, offices and stores with pipelines and wiring. We keep our country moving by building and maintaining the transportation network of roads, highways and airports. We are your resources, for today and tomorrow.

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