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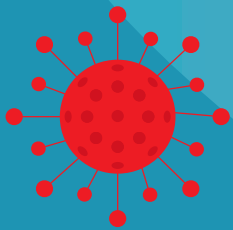
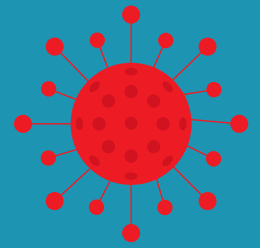
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MONTANA BUSINESS QUARTERLY

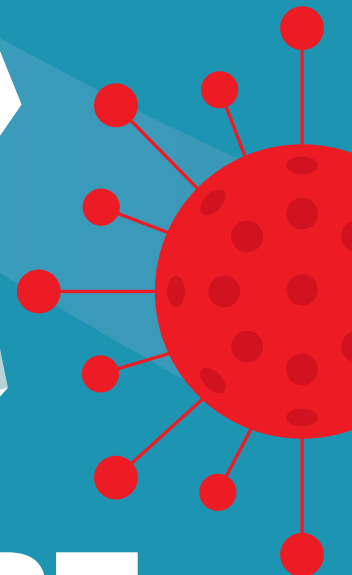
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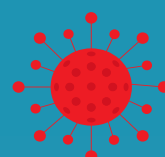
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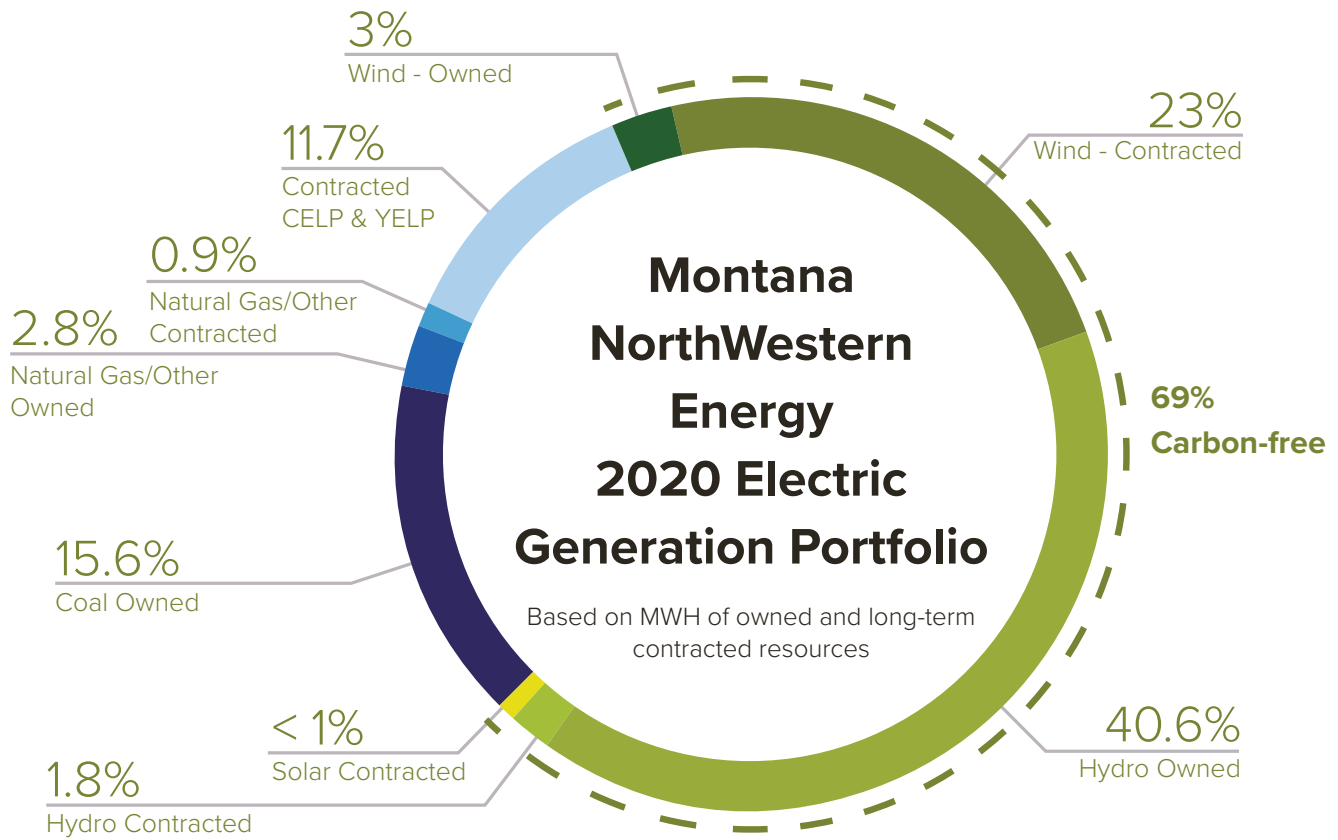
MONTANA

ECONOMIC REPORT



ANALYSIS AND ASSESSMENT OF
MONTANA'S ECONOMIC PERFORMANCE





Our Commitment to Clean Energy

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MONTANA BUSINESS QUARTERLY

WINTER 2021
ISSUE 59 NUMBER 4

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Realtor Nancy Brook, left, shows a house to Heidi Blackmore as a potential investment property in Billings. (The Billings Gazette, Casey Page)

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The Bureau of Business and Economic Research has been providing information about Montana's state and local economies for more than 70 years. Housed on the Missoula campus of the University of Montana, the bureau is the research and public service branch of the College of Business. On an ongoing basis the bureau analyzes local, state and national economies; provides annual income, employment and population forecasts; conducts extensive research on forest products, manufacturing, health care and child well-being; designs and conducts comprehensive survey research at its on-site call center; presents annual economic outlook seminars in cities throughout Montana; and publishes the award-winning Montana Business Quarterly.

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COVER

Illustration of COVID-19 hitting the dollar currency symbol. (Shutterstock)

MESSAGE FROM THE PRESIDENT OF THE UNIVERSITY OF MONTANA

The University of Montana is excited to turn our calendars to 2022, and we look forward to strengthening our partnership with Montana's businesses in the new year.

Last year marked a significant change in how we work with local businesses to solve the most pressing issue facing our economy – workforce shortages. By partnering with employers and industry associations, UM's economic and workforce development partner, AccelerateMT, is rapidly developing short-term training and education solutions to help employers enhance and retain their workforce, as well as build a pipeline of employees to meet emerging needs.

Here at UM, we are proud that AccelerateMT serves the entire state, working closely with every institution in the Montana University System, as well as with other partners, to develop rapid training solutions.

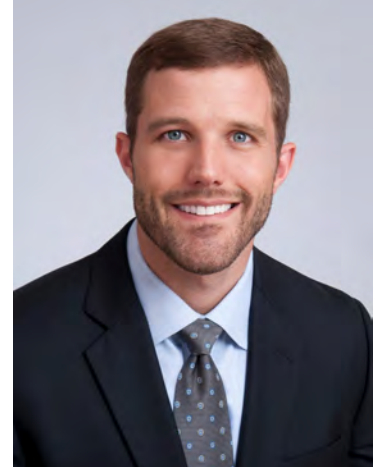
For example, through pioneering industry partnerships such as Aim Higher – a 15-week course in coordination with ATG Cognizant – UM is proving to be our state's workforce development engine. In fact, our combined efforts allowed ATG-Cognizant to hire more than 100 well-trained employees right here in western Montana.

But workforce training and education solutions for employers are only a part of the path to prosperity. AccelerateMT also supports innovators, entrepreneurs and businesses across our state with coaching, advice and specialized programs that empower Montanans to launch or grow their businesses.

In the year ahead, we will build on these successes. There is no better workforce training engine than the Montana University System, and at UM, we are working proactively with Gov. Greg Gianforte, the Montana Legislature and employers to meet the unprecedented demand for a well-educated and well-trained workforce.

Reach out to us in 2022 and let us know how AccelerateMT can solve your workforce challenges. By working together, we can provide our state with the solutions that move Montana forward.

Seth Bodnar
President
University of Montana





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THE YEAR IN REVIEW

Statewide Economic Performance

Consumers Lead Strong Bounce Back

BY PATRICK M. BARKEY

The two months of economic free fall in the spring of 2020 were as intense and frightening in Montana as any other state, but what has followed has been equally amazing. Digging out of a very deep hole, economic growth since midsummer of 2020 has vacillated between torrid and red hot, particularly as measured by wages and income. And with that growth has come some familiar problems, such as the labor shortage, and one new one – inflation.

The fact that the state economy registered growth of 1.6% in inflation corrected nonfarm earnings in the recession year 2020 is testimony to how strongly the economy rebounded

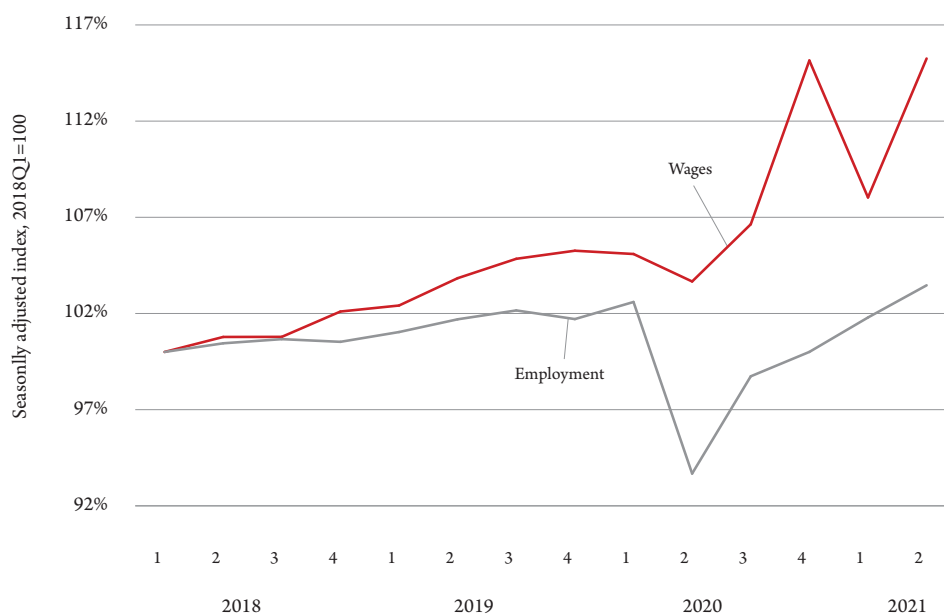
in the second half of that year. The Bureau of Business and Economic Research now estimates that growth in 2021 surged to 4.3% as vaccines relaxed health concerns and the services economy reopened. In a sign of the underlying economic strength, Montana general fund revenues grew by a heady \$430.5 million in fiscal year 2021, led by a 23% gain in individual income taxes.

A Jobs Recession

A recession that was nowhere on the radar screen exploded across the economy in March and April – leaving

Figure 1. Wages and employment, Montana, 2018Q1-2021Q2.

Source: U.S. Bureau of Labor Statistics, quarterly census of employment and wages.



no community, state or even country unscathed. The list of unprecedented changes in economic activity was a long one, as fear spread of a widespread, potentially lethal contagion contracted by ordinary human contact that characterized so many aspects of economic activity. By the end of April, the number of Montanans collecting unemployment insurance pushed past 60,000, well over 10% of the total workforce. And many forecasters, including the Bureau of Business and Economic Research, were predicting serious challenges for state and local government revenues as they foresaw a long period of underperformance.

Yet within six months of this epic event, evidence of the error of this assessment – in everything from consumer spending to state tax revenues – was unmistakable. The explanation for this is the divergence of the performance of employment and inflation-corrected total wages over the recession and recovery, as depicted in Figure 1.

There is no mistaking the recession when measured in terms of jobs in Montana. Even with strong growth in the remainder of 2020, it was a significant downturn. Yet when we examine the total wages paid to Montana payroll workers, the downturn in the second quarter of 2020 is barely perceptible and the growth that came immediately afterward is dramatic. How is an economy with fewer workers bringing home nearly the same, or later dramatically more, in their total paychecks?

There are three answers to this: First, job losses were concentrated in personal services jobs where human contact was unavoidable, which tend to pay lower than average wages. Second, for some companies and industries, the consumption shifts that occurred during the pandemic were a boon – witness what occurred and is still occurring for grocery stores and good distributions companies. This translated into higher hours worked per employee. Finally, there were significant wage increases through base pay gains and bonuses that boosted dollar totals without impacting employment.

Managing Montana's Economic Recovery

The recovery of the Montana economy from the pandemic recession stands out as one that has been influenced by public policy decisions more than any in recent history. Congress has lavished the economy with stimulus payments to individuals, businesses and governments, with more spending on the way. Public health decisions at all levels of government –

including the closure of the Canadian border, the closures and adjustments at public schools, and even policies relating to the extension of unemployment insurance – have had visible impacts on individual industries and regions. And, of course, Montanans have been impacted by the unwelcome return of price inflation that can be laid at the feet of those charged with managing the national economy.

The emergence of the issues caused by rapid recovery have been the focus of attention of policymakers and will continue as challenges going forward. It is easy to second guess the decisions that helped bring them about. But compared to the now-debunked fears of prolonged economic stagnation that descended over the economy in the midst of the declines, they are good problems to have.

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

Figure 2. Job losses by sector, Montana, FY2020-21. Source: U.S. Bureau of Labor Statistics, quarterly census of employment and wages.

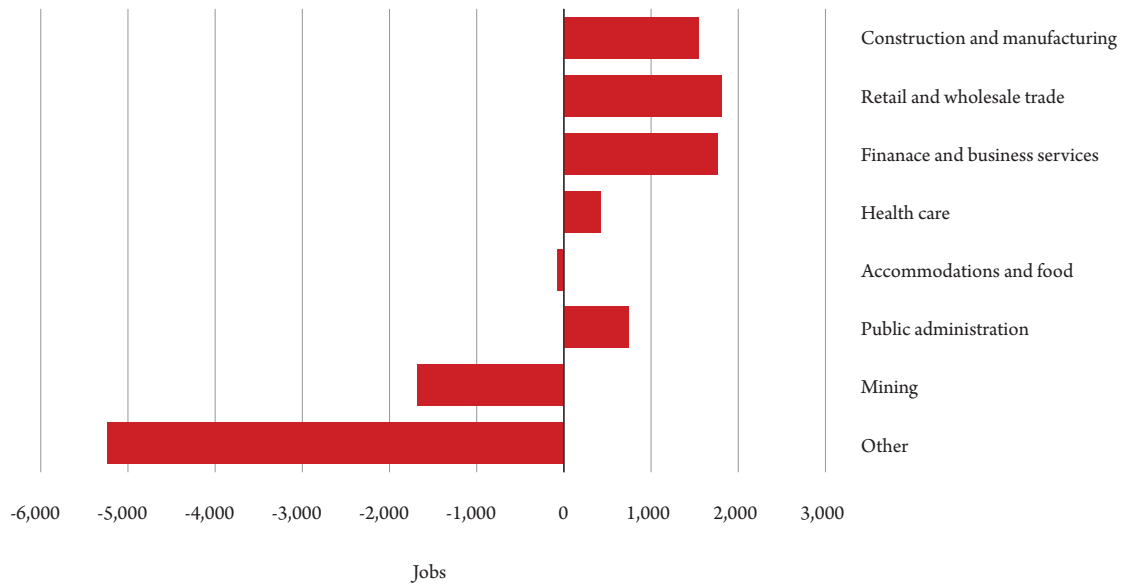
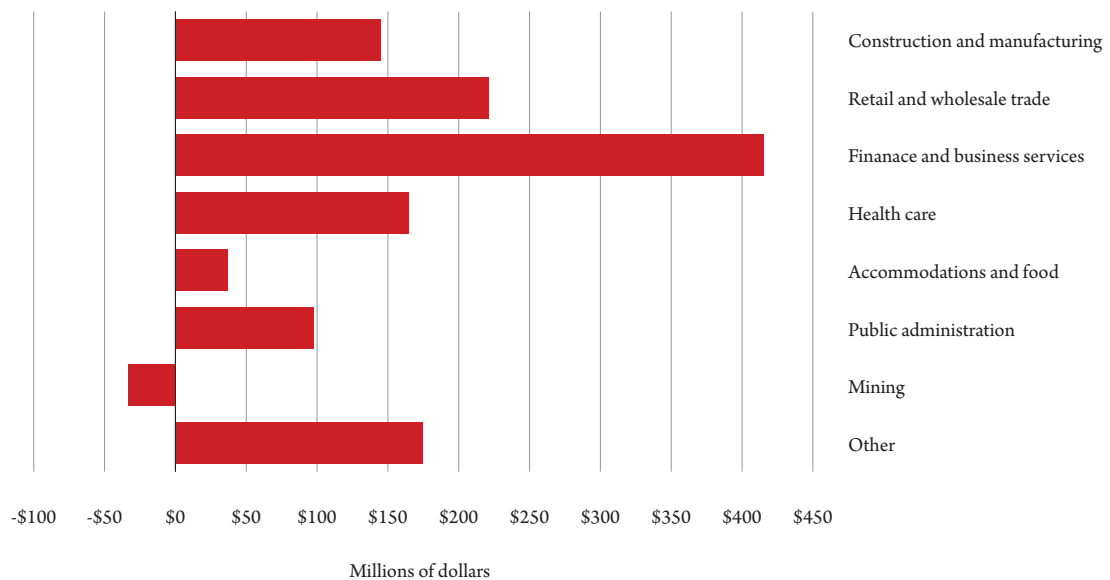


Figure 3. Wage loss and growth by sector, Montana, FY2020-21. Source: U.S. Bureau of Labor Statistics, quarterly census of employment and wages.



The Performance of the BBER Forecast

Forecast Relatively Accurate Despite Economic Shocks

BY DEREK SHEEHAN

The year 2020 certainly was unexpected and unprecedented, but possibly less of a forecasting challenge for Montana’s real nonfarm earnings. Forced business closures and massive unemployment in the second quarter of the year led to the largest decline in quarterly nonfarm earnings (8.2%). This decline immediately proceeded the largest increase (5.3%) in the third quarter of 2020. Despite these unpredictable swings, the Bureau of Business and Economic Research’s annual forecasts projected growth of only 0.7 percentage points higher than occurred (2.3% versus 1.6%).

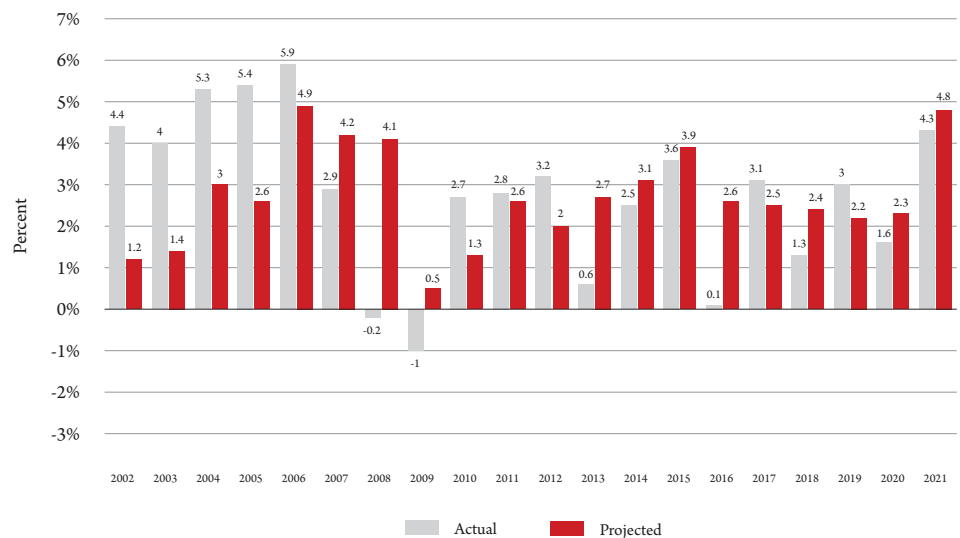
To assess how the BBER forecasts have stacked since 2002, Figure 1 depicts the difference between actual and projected inflation-adjusted nonfarm earnings. The BBER forecast for 2021 was 4.8% growth as earnings rebounded from the slow growth in 2020. While data is not yet complete for 2021, annual growth is expected to rise 4.3%, given its current pace through two quarters, a potential error of 1%. The U.S. Bureau of Economic Analysis will revise these estimates in the coming years, but when looking at Figure 1, the impacts

of the COVID-19 pandemic on annual nonfarm earnings doesn’t appear to be substantial.

Forecasted growth since 2002 missed the mark by 1.6 percentage points per year with no evidence of bias in an upward or downward direction. Forecasts from 2002 to 2009 appear now overly optimistic partially due to the forecasting challenges of the Great Recession. However, forecasted growth has missed by an average of 1 percentage point per year for the past 10 years – showing either improvement in our forecasting efforts or increasing economic predictability following the Great Recession. We will continue to try and improve the accuracy of our forecasting efforts going forward.

Derek Sheehan is an economist at the Bureau of Business and Economic Research at the University of Montana.

Figure 1. Actual and projected change in real nonfarm earnings, Montana, 2002-21. Sources: Bureau of Business and Economic Research, U.S. Bureau of Economic Analysis.



Montana's Cities and Regions

Pre-COVID Growth Patterns Reemerge

BY PATRICK M. BARKEY

There was no escape from the ravages of the COVID-19 recession across the landscape of Montana's regions in 2020. High-flying areas of the state and more slowly growing areas alike suffered astounding job losses during the spring of that year. Yet the surprise of that sudden and severe downturn has been closely followed by a vigorous economic recovery that contained its own surprises. Among these were superheated housing markets, significant price inflation and a surge in consumer spending. And through it all, the divergence in patterns of growth across Montana regions has resumed.

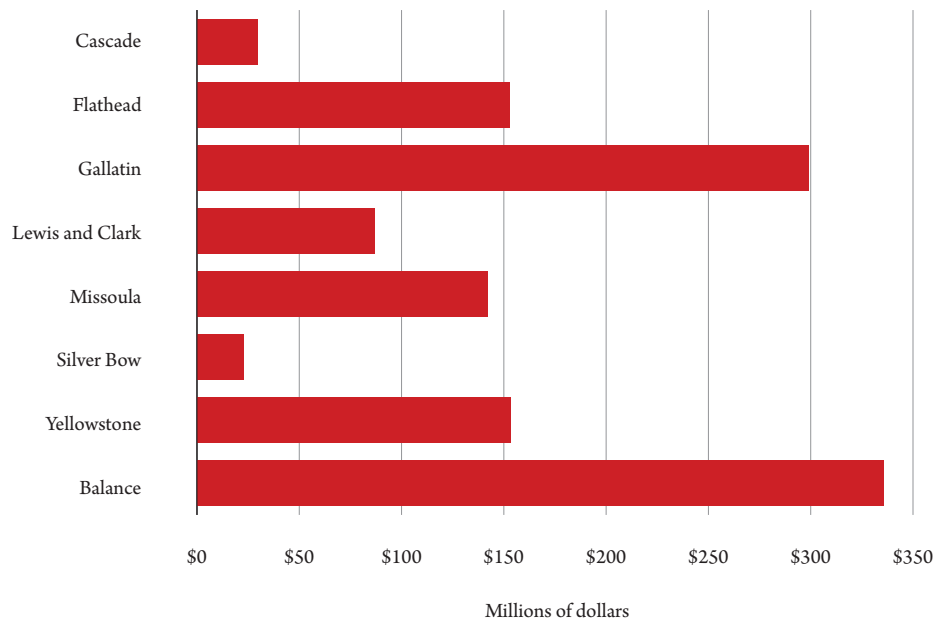
From a national perspective, there have been winners and losers in this economic recovery, and those outcomes potentially matter for individual Montana communities. Broadly speaking, this has been a recovery that has seen shifts in consumer spending patterns, continued disruptions in global commerce, decreased appeal of living in large cities

and accelerated adoption of technology. And like any other time in our economic history, it has seen some industries outperform others.

Some disruptions were positive for regions of Montana. While international travel got off its deadbed in 2021, the real or perceived difficulties of flying overseas redirected visitors to domestic venues. Huge visitor volumes at Montana's two large national parks poured spending into the adjacent counties of Flathead and Gallatin. And the increased national appetite for housing in less densely populated areas has brought plenty of out-of-state buyers into local housing markets.

Tracking economic growth in terms of total wages paid to payroll workers, inflation-corrected, shows the differences in growth in the current economic recovery between the state's most populous counties, as well as the balance of the state. Since the latest data extend only to the second quarter

Figure 1. Growth in inflation-corrected wages, FY2020-21.
Sources: U.S. Quarterly Census of Employment and Wages, U.S. Bureau of Economic Analysis.



of 2021, the growth shown in Figure 1 refers to the changes of fiscal year 2021 (July 2020-June 2021) compared to the previous fiscal year.

Gallatin County in southwest Montana adjacent to Yellowstone National Park continued to pace statewide growth, adding almost \$300 million in wages in 2021. But \$335 million in wage gains, more than a quarter of total state growth, occurred outside the largest seven counties in the state. Missoula and Flathead counties were in the next tier of growth as in past years, but 2021 saw considerable improvement in total wage growth in Yellowstone County, the state's largest economy. Also notable was an uptick in Lewis and Clark County growth that was indirectly due to the heavy levels of national economic spending that expanded the role of state government during the pandemic.

Gallatin County Continues to Surge

Much was made of the U.S. Census announcement that the population in Gallatin County had overtaken Missoula County to become the state's second largest. In terms of its economy, that event occurred at least three years ago. The state's fastest growing county continued to pile up eye-watering growth statistics in 2021.

In just one sign of the pace of growth, third quarter 2021 enplanements at Bozeman Yellowstone International Airport were up by 90% from pre-COVID 2019 levels, the second fastest of all airports in the country. The facility recently completed a terminal expansion thought to be adequate for the next 10 years, but is now already planning more expansion.

The state's fastest growing economy is being driven ahead by very strong growth in its professional services employers, where inflation-corrected total wages were up by more than \$70 million. Most of these gains, as well as those in manufacturing, were high-tech related. Across the board growth resumed immediately after the COVID spring of 2020, with job gains of 15% since that time.

Growth has created problems as well, especially in housing and labor availability. Zillow reported median home values in Bozeman of \$671,530, and realtors report listing prices of homes for sale well in excess of that.

The Next Growth Tier: Flathead, Missoula and Yellowstone Counties

In terms of recent growth, Flathead, Missoula and Yellowstone counties have in common growth of around \$150 million in total wages in the most recent fiscal year, but the drivers of that growth and their economic mix overall are quite different.

As the smallest of the three counties, Flathead's growth in percentage terms was fastest. Adjacent to Glacier National Park, the county was the recipient of considerable visitor spending in a busy tourist year. The booming real estate market in this high amenity part of the state was another important driver. Growth was broad-based, with manufacturing and transportation also producing sizable gains.

Missoula County has seen faster growth since 2018, mostly due to growth related to high-tech. But 2021 growth came from strong rebounds in retail sales and health care, two segments of its economy that serve the broader region. Retail growth was dominated by building materials stores and vehicle dealers. Missoula also had a higher benefit from COVID-related government spending than other parts of the state.

Yellowstone County has grown slower than the state average for a number of years, due to the slowdown in oil and gas production activity and the weakness in the four-state region, which it serves as the economic hub. Similar to Missoula, its retail trade and health care businesses helped propel faster growth in 2021, even as its mining support and manufacturers (primarily its three oil refineries) turned in subpar performances.

Completing the List: Cascade, Lewis and Clark, and Silver Bow Counties

In past years, lower rates of population in-migration and a lower presence in faster growing professional services industries has produced slower growth in Cascade (Great Falls), Lewis and Clark (Helena) and Silver Bow (Butte) counties. That story changed this year in Lewis and Clark County with the surge of federal spending helping raise total wages in the state's capital region by \$87 million in 2021. Past

growth from new facilities, such as Boeing, fell back, while health care, as in so many other parts of the state, saw good growth.

Cascade County's total wage growth of just under \$30 million in 2021 had a bit more headwind, with declines in information (media), accommodations and food and professional business services more than offset by gains in construction, health care and government. The announcement of the new medical school in Great Falls holds some promise for gains going forward, while the challenges for Montana agriculture weigh more heavily on this urban area.

Butte-Silver Bow's modest growth in total wages hides stronger up and down movements in individually important

industries. These include the utilities industry (mostly NorthWestern Energy) and manufacturing, which nudged downward in 2021, offset by gains in retail, transportation, administrative support and health care.

The recent year was one in which some long standing differences in growth in jobs and wages across the different parts of the state resumed. The hole that was dug during the brief, but severe, recession of 2020 was deep, but growth last year made considerable progress to regain what was lost.

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

State Revenue Report

Montana Tax Revenue Very Strong

BY TERRY JOHNSON

As shown in Table 1 for fiscal 2021, total general fund revenue collections were \$2.96 billion, with 79% collected from income (individual and corporation) and property taxes. These revenues are used to finance a variety of state services, but a majority of these funds are used for education, human service and public safety programs.

Total general fund revenue collections increased by \$430.5 million or 17% from collections received in fiscal 2020. This increase was unusually high and was attributed to income and corporate income tax collections. The sum of the changes for the remaining sources were a net increase of \$21.2 million primarily caused by increased video gaming taxes.

The change in income taxes can be explained by two main factors. Because of the COVID-19 pandemic, the calendar 2020 tax due date was extended from April 15 to June 15. This extension caused approximately \$50 million in collections to be recorded as fiscal 2021 receipts instead of fiscal 2020. This means fiscal 2021 collections were overstated by \$50 million and fiscal 2020 collections were understated by the same amount.

In addition to this issue, the federal stimulus payments enacted by Congress resulted in substantial payments to

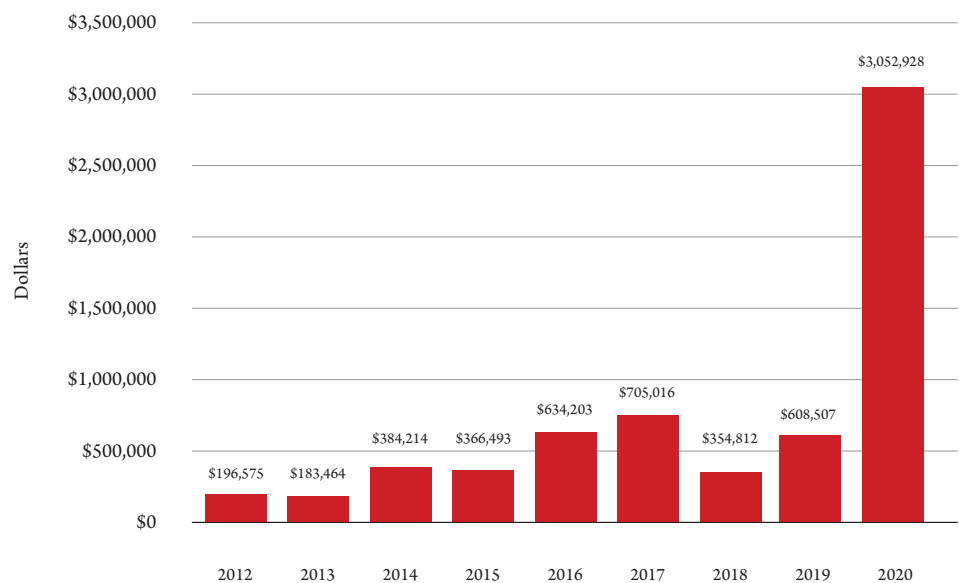
Montanans. The economic statistic maintained by the U.S. Bureau of Economic Analysis provides a measures of transfers payments to Montanans from the federal government. Figure 1 shows the year-over-year change in these funds since 2012. The amount of change increased by \$3.1 billion from 2019 to 2020, a 29.2% increase. Since these monies are considered taxable income under Montana law, income tax collections were increased based on the tax liability of the taxpayer.

Terry Johnson is the former chief revenue forecaster for the state of Montana, retired.

Table 1. Total general fund collections, Montana. Source: Montana's Statewide Accounting, Budgeting and Human Resource System.

Revenue Category	Fiscal 2017 Collections	Fiscal 2018 Collections	Fiscal 2019 Collections	Fiscal 2020 Collections	Fiscal 2021 Collections	% of FY 21 Total	\$ Change FY 20 to 21	% Change FY 20 to 21
Top Seven Sources								
Corporation Tax	\$126.0	\$167.1	\$186.5	\$187.4	\$266.5	9%	\$79.1	42.2%
Individual Income Tax	1,168.2	1,297.8	1,429.0	1,435.2	1,765.4	59.6%	330.2	23%
Insurance Tax	75.6	75.3	76.1	82.5	87.3	2.9%	4.8	5.8%
Oil & Natural Gas Tax	46.3	54.5	54.2	38.4	39.5	1.3%	1.2	3%
Property Tax	260.2	276.4	289.2	308.6	310.7	10.5%	2.1	0.7%
Vehicle Fee	109.2	109.5	109.5	108.5	117.8	4%	9.3	8.5%
Video Gaming Tax	60.0	60.3	63.2	57.4	74.9	2.5%	17.5	30.4%
Business Sources	59.3	61.7	63.7	72.2	69.4	2.3%	(2.7)	-3.8%
Consumption Sources	84.0	83.2	85.5	84.3	90.8	3.1%	6.5	7.7%
Interest Earnings Sources	25.5	28.7	40.1	40.1	19.3	0.7%	(20.8)	-51.9%
Natural Resource Sources	43.7	48.5	50.2	45.4	40.6	1.4%	(4.9)	-10.7%
Other Sources	83.5	142.4	126.2	73.3	81.6	2.8%	8.3	11.3%
Total General Fund	\$2,141.5	\$2,405.4	\$2,573.6	\$2,533.3	\$2,963.8		\$430.5	17%

Figure 1. Year-over-year change in Montana transfer payments. Source: U.S. Bureau of Economic Analysis.



The Major Economic Events of 2021

Montana Bounces Back

BY PATRICK M. BARKEY

As extraordinary as the economic downturn was in 2020, the ride up for the state economy in 2021 has been almost as robust. Some of the major events that occurred in the past year include:

- The state economy kicked off the year with a growth in personal income of more than 17% in the first quarter of the year, compared to year-ago levels. The American Rescue Plan spending passed by Congress was part, but not all of the story, as wages and salaries also grew robustly.
- The Montana unemployment rate fell to the extremely low level of just 1.9%, not seasonally adjusted, in October as very tight labor markets spread across the state.
- Gov. Greg Gianforte ended supplemental unemployment payments in June that were not scheduled to expire until September, in an attempt to address declines in the labor force that continue to impact Montana businesses throughout the state. At the same time, he launched a program offering bonus payments for the unemployed who returned to work.
- The Bozeman Yellowstone International Airport was ranked second in the country, only behind Sarasota, Florida, in percentage growth in enplanements. Montana's biggest airport saw 89.6% more enplanements in the third quarter of 2021, compared to the pre-COVID-19 third quarter levels of 2019.
- For the first time in this century, the University of Nebraska's drought monitor showed 100% of Montana's land area to be severely dry or worse. Poorly performing pasture land necessitated the early sale of calves and the sell off of cows, with potentially adverse impacts on ranching revenues going forward.
- The Idaho Forest Group announced it would wind down operations at its St. Regis mill by the end of 2021. Despite lower levels of physical production, Montana mills registered their highest revenue year since 2007-08, thanks to higher prices.
- The U.S. Census counts arrived and Montana will be granted a second Congressional seat for the first time since the 1990s.
- The Canadian government continued to relax border restrictions that had effectively halted passenger car crossings since the pandemic began, curtailing visitor and part-time resident spending in many Montana communities. In December, Canadians who spend less than 72 hours in the U.S. were no longer required to have a COVID-19 test to return.
- Montana visitor spending strongly rebounded in 2021, as vaccines helped usher more normal rates of mobility and restrictions on international travel focused more visitor volume to domestic destinations. Visitor volume through the summer at Yellowstone National Park was 40% above 2020 levels and 15% higher than 2019.
- Housing prices accelerated sharply across many Montana markets in 2021, as very low mortgage rates and increased appetite for housing in the wake of the pandemic hit markets with limited supply. The broadest based measures of housing prices rose by 21.3% in Missoula, 13.1% in Billings and 12.3% in Great Falls.

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



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THE U.S. ECONOMIC OUTLOOK

The U.S. and Global Economies

The Expansion Rolls on in 2022

BY PATRICK M. BARKEY

The vigorous economic expansion that began in the second half of 2020 will moderate in 2022, with countries around the world left to deal with the imbalances the rapid down-up cycle of the economy has produced. 2022 will be a year of above-trend growth, but with policymakers bringing stimulus programs to an end and monetary policies – while remaining expansive – begin to swing back toward a neutral stance. Consumer demand will abate slightly and price pressures from surging spending on good will ease.

The close of 2021 revealed the bumpiness of the energy transition from hydrocarbons to renewables, as price spikes and low inventories of coal and natural gas caused economic hardship and even power failures around the globe.

Here are the top 10 predictions for the U.S. and global economies courtesy of our friends at IHS Markit:

1. The new waves of COVID-19 will not interrupt the recoveries around the globe, although new variants will stress health care systems and provoke policy responses. The virus will continue to transition from pandemic to endemic as vaccines and affordable cures become more available.
2. Supply chain disruptions will continue in 2022, but inflation pressures will ease as policymakers respond and one-time pressures on prices from energy ease. Oil and gas producers are expected to boost production in the coming months.
3. Central banks around the world will begin to tighten monetary policies, although not at the same speed. U.S. policy changes have already been announced, Europe will be a little slower, with the U.K. somewhere in between.
4. The cessation and withdrawal of the extraordinary government spending levels during the pandemic translates into a considerable tightening for fiscal policy in 2022. The recently enacted infrastructure bill provides no significant spending until 2023.
5. The pace of global growth will slow in 2022, with considerable divergence in different regions of the world as policy stimulus wanes and some areas approach full employment. Negative surprises from COVID-19 variants will continue to disrupt growth.
6. U.S. growth will slow in 2022 as the pent-up demand surge from 2021 is increasingly satisfied and the economy transitions from final sales to inventory building. Gradually subsiding supply chain bottlenecks will cause core inflation to fall toward 2%. Pressure on prices from wage increases will continue.
7. Mainland China will avoid a full-scale housing market collapse, but will grow below potential in 2022.

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

Annual rates	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2	2020	2021	2022	2023	2024
Real GDP (% ch.)	6.7	2.1	7.1	3.7	4.0	-3.4	5.7	4.3	2.6	2.5
Real consumer spending (% ch.)	12.0	1.7	6.2	3.5	2.5	-3.8	8.1	3.8	2.0	2.7
Federal funds rate (%)	0.07	0.09	0.09	0.09	0.09	0.38	0.08	0.17	0.75	1.27
10-yr. T-note yield (%)	1.59	1.32	1.53	1.48	1.57	0.89	1.44	1.74	2.32	2.61
Brent crude price (\$/barrel)	68.83	73.49	79.52	72.67	74.67	41.77	70.67	77.08	75.25	68.80
CPI (year/year % ch.)	8.1	5.3	4.4	3.0	2.8	1.2	4.6	3.7	2.3	2.1
Housing starts (millions)	1.588	1.555	1.543	1.523	1.481	1.397	1.571	1.455	1.328	1.323
Unemployment rate (%)	5.9	5.1	4.4	3.9	3.7	8.1	5.4	3.6	3.5	3.7

8. While risks are elevated, particularly in countries such as Turkey, Argentina and Lebanon, a widespread emerging market credit crisis is unlikely.

9. Interest in environmental, social and governance investments will remain strong, but policy support for the energy transition away from fossil fuels will be tempered.

10. Geopolitical tension in the Taiwan Strait between the U.S. and mainland China will continue to escalate.

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

WHERE HOUSING IS HEADED

How Will Today's Imbalances Be Resolved?

BY PATRICK M. BARKEY

Forecasters spend a lot of time analyzing trends in data for a simple reason: Those trends form the foundation of their projections. And for buyers, the trends in housing prices are alarming. After rising faster than incomes for seven consecutive years, home prices took a sudden and surprising jump upward across Montana in the wake of the pandemic outbreak, pressing affordability for buyers in some areas to the breaking point. So, the question becomes, what lies ahead?

Ultimately, the price of housing, like most goods and services, depends on the interaction of supply and demand in each regional market. But there are many unique aspects of housing that lie behind those familiar concepts. Since new housing takes time to plan, develop and build, surges in demand, like what we saw in late 2020 through 2021, are reflected mostly in prices. Since housing is expensive, it is usually financed with borrowed money, making interest rates a critical factor for demand.

But housing's uniqueness in our economy goes much further than that. Shelter is a basic human need, and economic and political systems that fail to house their populations are judged as failures. That fact no doubt accounts for what is possibly the most unique aspect of housing, and that is the dozens of policies and regulations imposed by governments

at all levels that support, modify and in many cases restrict its production. The future of housing depends critically on the future of those policies as well.

Market Responses to Higher Demand

The COVID-19 pandemic served up plenty of surprises, but few were bigger than what happened to housing markets. The Great Recession of 2007-09 hammered real estate markets, but the COVID-19 recession did just the opposite. After a March and April 2020 period when the economy virtually froze, buyers emerged with a new desire for residential space that surged across regional markets that were already supply constrained. The result was an acceleration in housing prices in almost every market in Montana, as well as in the entire country.



A row of RV's parked along Patrick Street in Bozeman. The tight market has pushed some in the city to reside in RVs, campers or trailers. (AP Photo, Rachel Leathe)

As shown in Figure 1a, price growth that was averaging about 7% per year in the nation as a whole between 2013 and 2019 surged up to a stunning 23.6% annual rate in the summer of 2021. In some markets, price growth was even higher. Gallatin County median sale prices were just under \$700,000 in 2021, up 30%.

No one predicted this outcome, yet in hindsight it is easy to see some of the forces that combined to bring it about:

- The quick adaptation of the real estate industry to social distancing, using video showings and e-closings that effectively widened the market to a national pool of potential buyers.
- The quick transformation of what had been a slower affordability migration from higher priced states to places like Montana to an accelerated surge as physical space needs and crime concerns changed attitudes about density in major cities.
- The reluctance of sellers to list their homes, either out of fear of contagion or concern that the supply of housing to serve their changed needs would be inadequate.
- The decline of offices and the rising incidence of working from home and its impact on space needs.

Yet there were two more familiar and arguably more impactful forces that helped propel housing demand and housing prices to stratospheric heights in 2021 – mortgage rates and income. As Figure 1b makes clear, conventional 30-year mortgage rates fell below 3% at the same time as prices were surging. And unlike previous recessions, the COVID-19 recession saw heady increases in consumer incomes.

But mortgage rates are about to move up as Federal Reserve policy finally reacts to higher inflation across the economy – and the impacts on housing demand could be profound. Real estate brokerage Redfin is predicting that higher mortgage rates will produce much slower price growth nationally by 2023.

Policy Responses to Housing Affordability Declines

Housing markets are ultimately local, even if national forces affect them. The effects of high prices have been felt locally, giving rise to everything from long distance commutes to people living in RV parks in some Montana markets. And local governments impose a complex, overlapping web of building codes, zoning classifications, development and impact fees, and other policies that collectively impact how much, what

kind and what places housing is built. As the evidence that slow building rates affect affordability mounts, is there any likelihood of a reexamination of those policies?

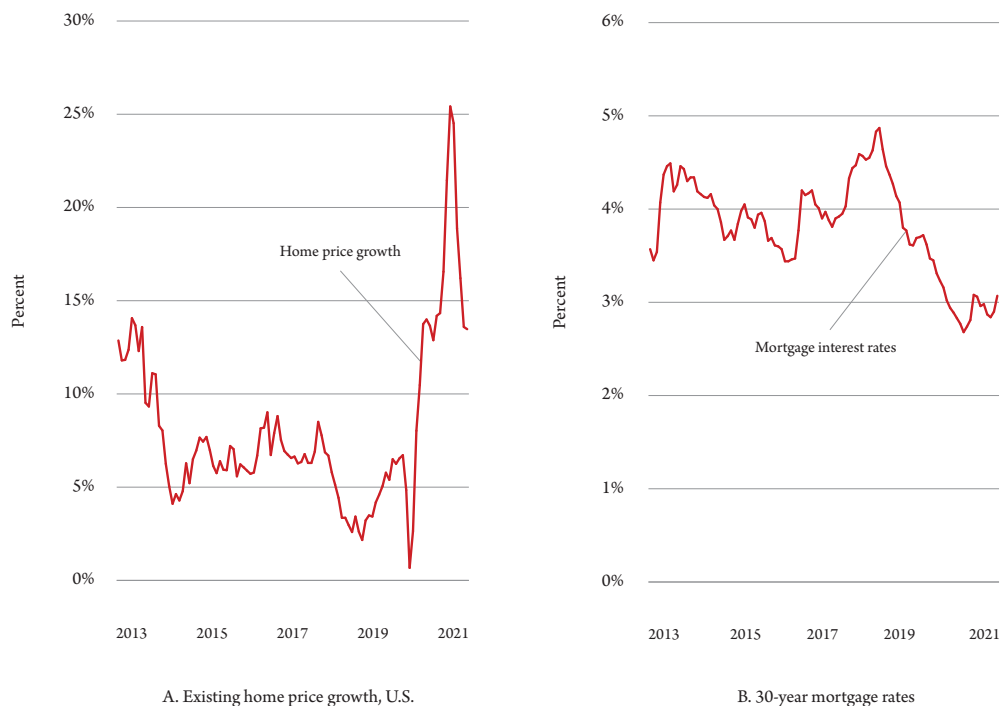
Policy actions clearly have impacts on markets, but the process that sustains or possibly modifies them is essentially political. Here we must squarely confront the less remarked upon fact that superheated housing markets in Montana, as elsewhere, have created winners, primarily existing homeowners who avoid disruptions in their neighborhoods as their housing wealth skyrockets.

The median voter hypothesis is a simple idea which holds that in a democratic government, it is the view of the voter squarely in the middle of the distribution of viewpoints on any given issue that prevails. And research says that many of the local policies that restrict housing supply, such as single-family home zoning, parking space requirements and building codes mandating things like windows in bedrooms are quite popular. Even those who are shut out of neighborhoods because they can't afford to live in them say that they would prefer to live in older neighborhoods with tree-lined streets and backyards.

Yet if policies affect prices, perhaps the inverse may someday be true as well. Markets are producing outcomes in some local housing markets that threaten to transform communities, pushing those who work in service jobs to the periphery as those with the means to afford housing – and consume many of those services – enjoy what their policies preserve. Better information on exactly how the overlay of local housing regulation translates into affordability might yet bend the trajectory of increasing roadblocks to housing growth.

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

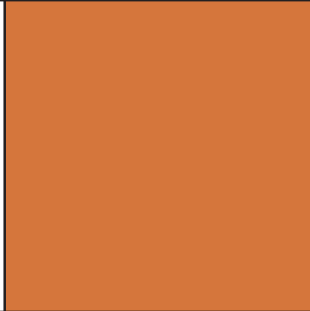
Figure 1. Home price growth and mortgage rates. Sources: Redfin and Freddie Mac.



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MONTANANS STRUGGLE TO ACCESS AFFORDABLE CHILD CARE

The Crisis of Montana's Workforce

BY CAITLIN JENSON AND TRACY MCINTYRE

Montana needs child care solutions. This statement is not a topic for debate, it is not a new fact, nor does it come as a shock to anyone. Montana has a serious issue with a lack of affordable child care. It is an issue that is affecting every business, every sector and every community regardless of size. Child care is a key factor in building a healthy economy and communities across the state are coming together to find solutions.

In the fall of 2020, Zero to Five Montana conducted a professionally administered survey of 600 randomly selected Montana voters about issues facing families with young children. This survey showed that 73% of Montanans are concerned that families are facing more financial stress and uncertainty, 75% of Montanans are concerned about parents not being able to work because of a lack of child care, and 81% of Montanans agreed that a quality early education experience is a good investment in their children and grandchildren. In addition, 58% of Montanans agreed that the wages of child care professionals were too low and 54% felt that Montana parents were currently paying too much for child care.

Numerous efforts to measure the impact of Montana's child care system on our workforce and economy have occurred since the COVID-19 pandemic began. The Bureau of Business and Economic Research (BBER) at the University of Montana identified in September of 2020 the impact on the workforce in Montana directly related to child care access. The BBER study showed that parents continued to experience child care-related work problems during the past year.

- 62% missed time from work.
- 26% declined to pursue further education or training.
- 22% turned down a job offer.



Iris Shook, 4, sings while Hannah Ringer, 4, looks on during play time at Rhiannon Shook's early childhood care program in Bozeman. (AP Photo, Rachel Leathe)

- 15% changed from full-time to part-time work.
- 12% quit their job.
- 8% chose not to go to full-time work and remained part time.

Access to affordable, high-quality child care is essential to a healthy economy, allowing parents of young children to engage in the labor force. Research from the Montana Department of Labor and Industry finds an estimated 32,000 working parents in Montana with children under 6 years old rely on some form of child care arrangement to remain in the labor force, which translates to approximately 6% of the state's labor force in 2019.

Despite this reliance on child care to meet the state's workforce needs, Montana's parents and businesses have suffered from a lack of availability. As of July 2021, licensed child care capacity in Montana meets only 44% of estimated demand – leaving over 20,000 children in working parent households without access to licensed child care.

Amy Watson, a senior economist with the Montana Department of Labor and Industry said, "Child care shortages exist throughout the state, which has contributed to Montana's workforce shortage and hampered the state's recovery from the pandemic recession."

According to the Montana Department of Labor and Industry, 60% of Montana counties (34 of 56) are considered child care deserts – meaning supply meets less than a third of estimated demand.

The global COVID-19 pandemic has exacerbated this shortage as important public health precautions have reduced the capacity at child care facilities across the state. During April 2020, 43% of licensed child care providers closed as an immediate response to the pandemic. These closures accounted for 10,921 child care slots at licensed providers. While many of these providers have found innovative ways to reopen and meet public health guidelines, shortages continue.

The Montana Department of Labor and Industry and BBER have outlined the impacts to Montana's workforce because of inadequate child care:

- An average of 54,000 Montana parents worked reduced hours in the first half of 2021, which translates to 10% of the state's labor force.
- 32,000 parents were absent from work or were working part-time instead of full-time due to a lack of child care or the need to monitor remote learning in 2021.

- 62% of Montana parents missed time from work due to inadequate child care in 2019.
- Montana households with children ages 0-5 lose an average of \$5,700 in wages annually due to inadequate child care.
- Taxpayers lose a total of \$32 million annually due to inadequate child care. The federal government loses almost \$23 million annually in lower income tax receipts, while the state of Montana loses \$9 million annually in income tax receipts.

And because of the child care situation, businesses are feeling the brunt of the issue first hand:

- Montana businesses lose nearly \$55 million annually due to inadequate child care, mainly from reduced revenue due to lower employee productivity and increased employee recruitment costs caused by unwanted employee turnover.
- Most businesses in Montana (57%) recognize there is a shortage of affordable child care options in their community and stated increasing access should be a priority (60%).
- 40% of all Montana businesses have difficulty recruiting and retaining a qualified workforce due to a lack of child care.
- Inadequate child care has prevented 30% of Montana businesses from growing.
- A lack of child care disproportionately impacts businesses with a predominately female workforce. Half of all businesses in Montana employing primarily women reported recruitment and retention difficulties due to a lack of child care.

So, what can be done? Zero to Five Montana is dedicated to the success of every child. Multisector partnerships are foundational to delivering stability and innovation, and to helping build an early childhood system where Montana families and communities can thrive. By taking a collaborative approach, Zero to Five Montana continues to lead a statewide team in identifying actionable solutions to the child care crisis, in part through analysis of the early care and education business ecosystem.

Zero to Five Montana, the Department of Public Health and Human Services, the Montana Department of Labor and Industry, the Montana Cooperative Development Center, and many private sector partners and foundations are all working collaboratively to find solutions to the state's child care crisis.

In 2018, the multisector team was inspired to work toward a common goal, as spurred by the "Child Care Solutions for Your Workforce Summit" held the same year. From this work, the Family Forward Initiative was designed to support employers across Montana in implementing policy solutions to recruit and retain employees with young children. The work of this collaboration continues and has been supported through a technical assistance grant from First Children's Finance.

Right now, employers across Montana are seeking innovative solutions to address the crisis. Such solutions include offering on-site child care, engaging in the development of cooperative models owned, operated and invested by businesses and community members, making connections through human resources with existing child care resource and referral agencies, modifying work environments to offer increased flexibility or remote work options, supporting through shared services existing providers, and developing innovative pathway programs for child care workers.

Increasing and strengthening the capacity for consultation and technical assistance infrastructure across communities will be key as the state continues to tackle this key issue. Zero to Five Montana and the Montana Cooperative Development Center have taken a proactive approach in partnering to merge early childhood systems expertise with an aptitude for business and economic development to support community and business leaders in their efforts to expand quality child care in their areas. Together, the partners have selected nine pilot communities to design and implement local community solutions. Businesses, community-based organizations, schools, public officials and more are coming together to discuss, determine and build their own solutions. These types of efforts will be critical as the state continues to move forward with addressing child care needs. And more innovation is needed. The crisis will not be solved overnight, but through grit and determination of Montanans' solutions are emerging.

To learn more, visit www.zerotofive.org and www.mcfdc.coop. Both websites will be updated as the pilot programs move forward with webinars, roundtables, resources, templates, and case studies.

Caitlin Jenson is executive director of Zero to Five Montana and Tracy McIntyre is executive director of the Montana Cooperative Development Center.



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THE FINANCIAL VALUE OF MONTANA'S NATURAL BEAUTY

How Should We Measure Our Natural Capital?

BY JAKKI MOHR AND CARMEN THISSEN

Montana is known for its natural abundance. Our state is home to incredible wildlife, our hills contain rich mineral deposits and our waters flow all the way to the Atlantic and Pacific Oceans. This natural abundance also upholds Montana's vibrant business economy – timber and ore provide the raw materials for lumber and mining, fish and wildlife sustain our sport economy, healthy soil and ample precipitation make farming and ranching possible, and our rivers, parks and forests bring as many as 12.6 million tourists to our state. One might go so far as to say that Montana's economy hinges upon nature.

But Montana's natural bounty – and business economy – is not immune to the global threats of climate change, biodiversity loss, land degradation, pollution and invasive species. As the World Economic Forum stated in its 2020 report, "Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy," more than half of global GDP, or roughly \$44 trillion, is moderately or highly dependent on nature and its services, and therefore exposed to risks from nature loss.

In Montana, these risks include wildfire, drought, hot weather and species loss. In 2021, nearly 1 million acres of

land burned due to rampant wildfire, affecting air quality, tourism, health and wildlife. By midsummer, more than 90% of the state was already experiencing abnormally dry to extreme drought conditions with a prediction for the situation to worsen through August – again affecting agricultural producers and others reliant on water.

As a result of these dependencies on nature, forward-looking business and government leaders across the globe are increasingly calibrating their companies' and agencies' environmental dependencies in the same monetary metrics as other economic decisions. Called "natural capital accounting,"



Steve Connole fishes in the Missouri River near Helena. (AP Photo, Matt Volz)

this movement seeks to address the growing environmental challenges businesses face by identifying, assessing, and disclosing the financial materiality of nature-related risks to business, financial institutions, asset owners, regulators and governments.

In describing the concept, Capitals Coalition CEO Mark Gough said, "Whether we're talking about intellectual capital, manufactured capital, and the natural... social, human, all of these have the same fundamental basis. You look at them as a resource that if you invest in, you get a return. You don't invest in them, you lose the capital, and it stops providing you the benefits that it was [providing] before. So, fundamentally underpinning it all [natural capital valuations] is a very simple concept really, that we should invest in the things that we value."

Like financial capital, natural capital can present both opportunity and threat. Understanding a business's economic impacts and dependencies on nature is critical to planning for a vibrant future. Calibrating environmental impacts and dependencies in monetary terms allows companies to align their long-term strategic interests with environmental dependencies. Companies are changing the way they work with suppliers to ensure a dependable stream of raw

material inputs. For example, a dairy company that relies on independent farmers for milk pays a premium to those farmers who proactively protect soil and water health.

Natural Capital Valuations

Resources that provide essential benefits to businesses and society are often referred to as "natural capital," and the functions nature provides are termed "ecosystem services." Natural capital includes both tangible goods, such as timber and mineral deposits, as well as services, such as absorption of rain waters by soil, storage of flood waters by wetlands, sequestration of carbon in forests, crop pollination by insects, and dilution and assimilation of wastes by rivers. Natural capital accounting tackles both impacts and dependencies, with impacts generally referring to how a company's business operations affect the natural environment (e.g., through air or water pollution, negative impacts on soil, biodiversity, etc.), and dependencies referencing the resources and natural functions a company relies on to run its business (e.g., raw materials and a healthy atmosphere).

For some, the very idea of measuring nature as a type of capital is problematic. Does such an approach commodify nature? Will assessing an economic value on natural assets

undermine their intrinsic value, turning the natural world into a subsidiary of the corporate economy? How can one value an asset where its true value is apparent only when it is part of a coherent whole, such as the role of soil and water in rivers and fisheries?

Here we argue that providing even an imperfect valuation of nature is preferred to regarding its goods and services as free. The inherent economic invisibility of nature has contributed to its ongoing degradation, and making environmental impacts transparent is a way to reverse this decline. This philosophy is consistent with the well-known business mantra, "If you can't measure it, you can't manage it." When companies understand the financial impact of environmental dependencies, they can invest in innovative strategies that not only reduce risk but also protect natural resources, mitigate climate impact and deliver returns in unexpected ways.

The Natural Capital Protocol

A variety of tools and approaches for economic valuations of nature exist. This article briefly reviews one of the major tools, the Natural Capital Protocol and offers insights for Montana businesses and government agencies.

The first stage of the protocol – getting started – addresses why companies are undertaking the valuation effort, with reasons often including risk management, cost savings, and/or marketplace responsiveness. Providing an economic assessment of natural capital places environmental impacts on a level playing field with other business decisions, elevating a topic like water quality or soil health to the same level as other raw materials and costs. In addition, communicating these impacts and dependencies on nature in economic terms makes it harder for senior management to ignore their importance.

The second stage – scoping – outlines the specific objectives, boundaries and materiality assessments of the key environmental impacts. Here, the goal is to identify where natural capital assessments are likely to yield new insights. For example, if the valuation process is likely to merely reinforce or confirm insights the company has already, such as knowing carbon impacts, then doing a financial measure of those impacts might not be worthwhile. Alternatively, using a materiality screen can help identify high impact areas where the valuation will provide new insights.

The third stage – measuring and valuing – is where companies collect data and assign valuation coefficients that quantify how much one unit of a given impact or dependency costs in monetary terms. In the case of carbon, valuation coefficients are fairly well-developed; the World Bank and others help

price carbon as a way to scale up greenhouse gas mitigation efforts. However, figuring out how much a liter of clean water is worth depends on many hyperlocal considerations, including drought and precipitation patterns, nearby water pollution, water access and so on. Here, businesses should remember to not let perfect be the enemy of the good. In fact, the exercise of identifying natural capital impacts and dependencies alone can reveal useful insights, even without coming to a specific numeric assignment.

The final stage – applying – is adopting the valuations to decision-making. Because natural capital assessments are based on financial metrics, they can help companies prioritize the impacts and dependencies that are most important. For example, an audit on a particular product reveals that of two different sources of the same raw material, one releases fewer greenhouse gas emissions, while the other uses less water. Putting these impacts in financial terms makes it easier for busy executives and decision-makers to choose a course of action. These economic assessments can also quantitatively evaluate “what if” scenarios, which can reveal previously unknown insights. What would happen if a company replaced oil and gas as key raw materials with renewables? By running these scenarios, decision-makers gain critical insights into how different actions will impact the financial performance of their company.

Conclusion

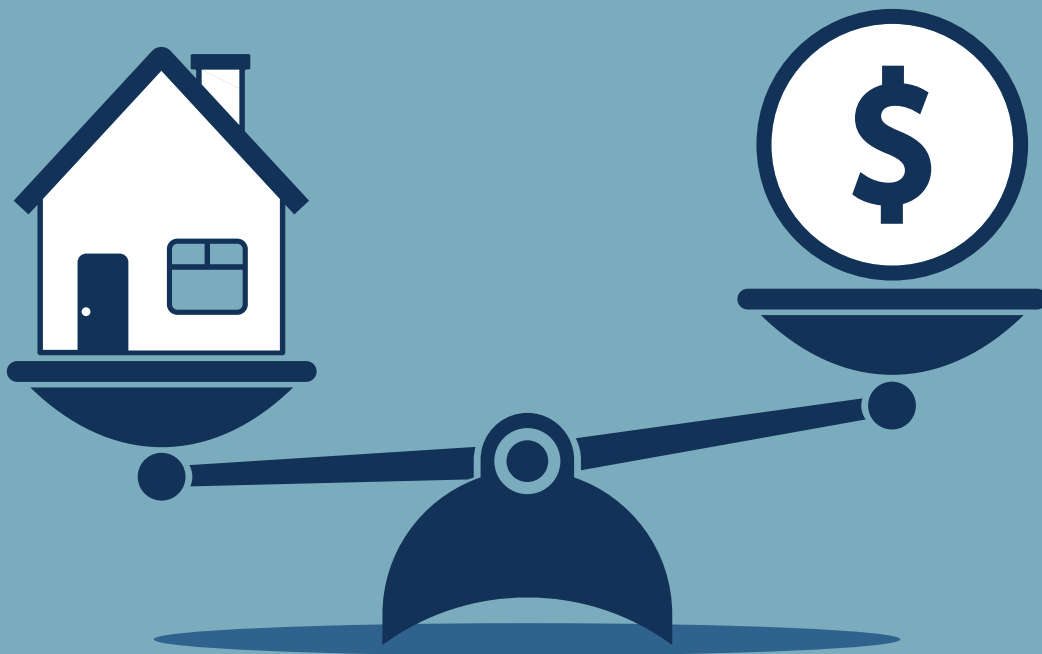
Though the concept of putting a dollar value on nature may be controversial, the valuation of natural capital brings clarity to the very essence of business survival. Without assessing natural capital impacts and taking specific actions today to mitigate them, there is the real possibility that Montana businesses – and businesses around the world – will not survive a future where climate change and biodiversity loss are worse than they are today.

As one expert notes, “[Businesses] can't continue as we do today, because if we keep our consumption patterns and business models running in the same way, it's just a matter of time until we have destroyed the planet, and that means until we have destroyed society, and that means until we have destroyed business.”

Jakki Mohr is the Regents Professor of Marketing and the Poe Family Distinguished Faculty Fellow in the College of Business at the University of Montana. Carmen Thissen is an associate at Business for Nature and graduate of the University of Montana.

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HOUSING TROUBLE IN PARADISE

Housing Needs Demand Creative Solutions

BY ABIGAIL ST. LAWRENCE

Anyone who has spent any time engaging with Montana policymakers, listening to business leaders or just reading the news knows that housing tops the list of hot topics in our state. Availability of units, the pace of sales and, of course, land values all drive the conversation in just about every arena of public life right now. Housing may seem like a sudden crisis, and although housing has certainly drawn more press lately, a combination of socioeconomic factors have been converging for over a decade to produce Montana's current market conditions. Consequently, no single solution will change the market conditions either, but the whole situation requires comprehensive analysis and presents opportunities for creative problem-solving.

How Did We Get Here?

At its simplest level, Montana's housing market conditions starkly display the forces of supply and demand. Fast-growing demand and low inventory collide to produce higher prices. Between the 2010 census and the 2020 census, Montana's overall population grew by 10%. New housing units however, increased by only 7%. The city of Missoula estimates a shortage of approximately 2,400 units just to meet current demand, let alone future growth. And most of us have seen the sharp rise in housing costs in Gallatin County, one of the fastest growing counties west of the Mississippi over the past decade. Average sale prices there are up around 30% over the past year to \$700,000.

The Pew Charitable Trusts recently presented to the Montana Legislature's financial modernization and risk analysis study committee on Montana's housing market and had a simple but enlightening conclusion – the fundamental driver of housing prices is low housing supply. While that may seem like a no-brainer statement, boiling the housing issue down to the impact of supply and demand puts into acute focus both the causes and the potential solutions to housing needs in Montana.

On the demand side of the equation, the study identified both basic population growth in Montana and changing household sizes as the sources of increasing demand. Over the past several generations, the average American household

has shrunk from 3.7 people in 1940 to 2.5 in 2020. This means that even if the population had zero net growth, housing needs would still increase with the same number of folks spread out over more households.

Changing household demographics in Montana must consider both changes in household size and the overall graying of Montana. The latest census data puts the average age in Montana at 39.8 years old, a solid two years over the average age nationwide and the highest average west of the Mississippi. Only 10 states have higher average ages, including retirement hot spots like Florida. Montana growing older factors into housing conditions as older Montanans live longer and chose to age in their own homes. This mean less movement out of existing homes that would otherwise be available for younger families.

Population growth, decreasing household size, an increasing number of households and a higher than average age have all gradually contributed to increasing demand for existing housing units. Then came COVID-19 and the corresponding outsized impacts on housing in Montana.

The COVID-19 Complications

Changing household demographics and a growing population have built up the housing market over the past decade, to say nothing of the impacts of low mortgage interest rates and other economic factors. However, the past two years introduced a large and unforeseen wrench into Montana's housing market that had an outsized impact – COVID-19.

All of a sudden, folks who harbored dreams of leaving the city rat race and living out their Western fantasies had an opportunity to work from anywhere as employees moved to long-term work-from-home arrangements – and some large employers even closed their central locations entirely. With average home sale prices in states like California topping \$800,000, liquidating a suburban home in a large metro area and plunking down top dollar for a dream home in one of Montana's desirable destination communities wasn't out of reach. Typically, less attractive markets like Billings and Great Falls became more affordable for new residents.

Montana's recreation industry has grown markedly over the years, so much so that Gov. Steve Bullock's administration established an Office of Outdoor Recreation in the governor's office during his last term. A recreation economy depends on out-of-state residents with significant disposable income – those wanting to spend their vacation time and

money to enjoy all Montana has to offer, a draw Montana has built with great success over the years.

Montanans like to joke about how nonresidents are welcome to spend their money and then go home. However, when the Californians, Texans and Midwesterners pull up roots en masse, Montanans can't be shocked when they want to live where they vacation. One could write a book on the intersection of promoting a recreation-based economy, the sudden disruption of COVID-19, and an already hard-pressed housing market. But suffice it to say, analysis of Montana's current housing circumstances and development of solutions must take that all into account.

So, What Do We Do?

Homebuilders talk about the "three Ls" as drivers in the housing market – lumber, labor and lots. While that quip perhaps oversimplifies the equation, the solution to the disconnect between available housing units and housing demand in Montana, particularly in Montana's most desirable and fastest-growing areas, must consider materials and cost, human capital, and land use regulations. The good news is Montana's housing conversations do include all of these factors as policymakers challenge themselves to come up with comprehensive solutions.

Montana as an individual state can do little about materials prices. However, the Montana Legislature and stakeholder groups have already had extensive conversations on land use regulations at both the state and local level. These discussions are to determine where we can improve the review and permitting process to ease new housing construction, while maintaining and protecting public health, safety and welfare. Additionally, state government, education institutions, and even local business development agencies and trade associations are working to encourage participation in the building trades as a path to a prosperous long-term career.

It will take all this work and more to address housing needs in Montana, but a willingness to think creatively and comprehensively may just be the key to resolving trouble in paradise.

Abigail St. Lawrence is an attorney practicing in water rights, natural resource, environmental and administrative law.



Sibanye-Stillwater is a global precious metals mining group with a significant presence in South Africa and Montana. It is the world's largest producer of platinum group metals (PGMs), primarily platinum and palladium. PGMs are a critical component of catalytic converters found in almost all of the 97 million cars and trucks produced globally every year (pre-COVID-19). PGMs are also used extensively in jewelry production.

US PGM OPERATIONS

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 the largest global recycler of PGMs derived from spent catalytic converters. The majority of the company's PGMs are used in catalytic converters to reduce vehicle air emissions.

STILLWATER AND EAST BOULDER MINES

	Leading low-cost PGM producer
	603,066 ounces mined in 2020
	14.2 million total ounces PGMs produced historically
	26.9 million ounces proven and probable reserves (78% palladium and 22% platinum)

COLUMBUS METALLURGICAL COMPLEX

	Includes smelter, base metal refinery and analytical laboratory
	840,170 ounces recycled in 2020
	1.41 million ounces processed in 2020
	Consistently less than 5% of operating permit air emissions limits at the smelter

COMMUNITY LEADER

At Sibanye-Stillwater, we believe our mining improves lives and we are committed to our purpose of creating superior value for all of our stakeholders.

	1,881 Montana employees
	\$31 million local taxes in 2020
	\$212 million annual payroll costs
	\$49 million in annual employee taxes
	\$399 million in total annual purchases
	\$85,000 awarded in scholarships
	\$400,000 in charitable contributions annually with 50% to community projects, 15% education, 31% emergency services and 4% environmental projects



ASSESSING MONTANA'S KEY INDUSTRIES

Farming and Ranching *Navigating Another Drought*

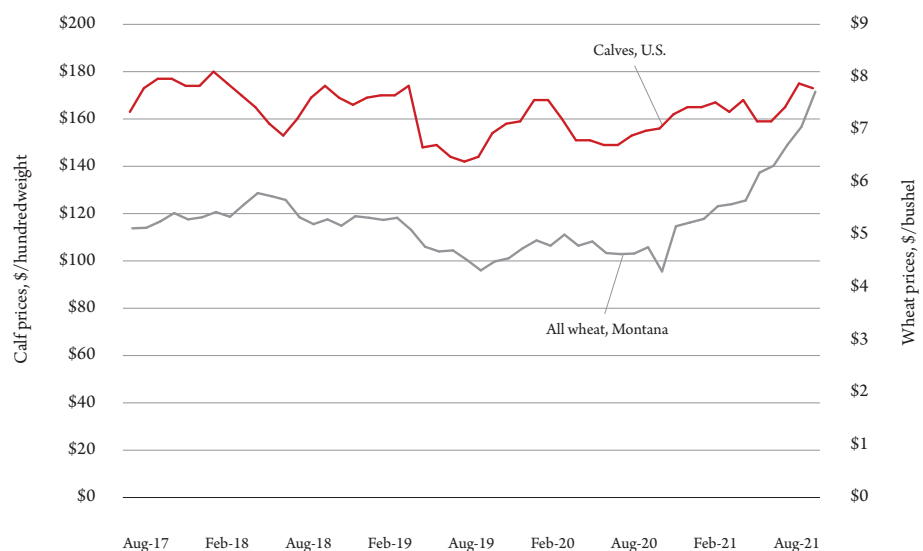
BY GEORGE HAYNES AND KATE FULLER

Montana farmers and ranchers experienced a challenging year in 2021. Severe drought conditions throughout the state substantially lowered crop and hay yields, although lower levels of production were to some extent offset by stronger grain and cattle prices (Figure 1). By October, 100% of Montana's land area was rated as severely dry or worse by the University of Nebraska's Drought Monitor – a first for the state in the 21st century.

Crop Production and Prices

Lower yields and a decline in planted acreage resulted in lower production for many wheat, barley and hay producers throughout Montana. While winter wheat planted acreage increased, total production of winter wheat decreased by 29%. Total production of spring wheat decreased by 71% as average yields declined by 55% and planted acres also fell. Production declines in wheat were offset by producers marketing stored grain – wheat stocks decreased by more

Figure 1. Wheat and calf prices in Montana, 2017-21. Source: United States Department of Agriculture/ National Agricultural Statistics Service Quick Stats.



than 50% from 2020 to 2021. Total production of barley decreased by 52% because fewer acres were planted and average yields were the lowest since 1953, declining by 40%. Similarly, alfalfa and grass hay production fell by 57% because of fewer harvested acres and lower average yields.

Wheat, barley and hay have been the most stable crops in Montana for several decades. However, since the early 2000s the number of acres planted to pulse crops (lentils, dry peas and chickpeas) has expanded, again eclipsing 1 million acres in 2021. However, total pulse production declined by 37% for lentils, 48% for dry edible peas, and 12% for dry edible beans in 2021.

Throughout Montana, substantial increases in the prices received for wheat, dry peas, dry beans and hay helped to offset the impacts on farm revenues of lower production levels in 2021. From January through September 2021, winter wheat prices increased by 29%, spring wheat prices by 44%, barley prices by 25%, dry pea prices by over 48%, dry bean prices by 54%, lentil prices by over 65% and hay prices by 70%.

Livestock (Cattle) Production and Prices

Nationally, beef production in the United States increased by less than 3% in 2021. Montana ranchers are largely cow-calf producers, who market about 1.5 million calves each year. In a typical year, about one-third of the pasture and range utilized by cattle operations is rated as very poor to poor. However, in 2021 90% of all pastures and range were rated in very poor or poor condition. Thus, many cattle operators chose to cull their herds or ship cattle to market earlier because of the dry conditions and lack of access to feed. With more calves being marketed earlier than normal, calf prices remained relatively stable, increasing by about 5%.

George Haynes is a professor and extension specialist in the Department of Agricultural Economics and Economics at Montana State University. Kate Fuller is an associate professor and extension specialist in the Department of Agricultural Economics and Economics at Montana State University.

Forest Products

COVID-19 Hangover Impacts Wood Products

BY STEVEN HAYES AND TODD A. MORGAN

During 2021, new home starts rose to their highest level since the Great Recession, even as gains in home prices continued. New construction and remodeling fueled unusually high lumber prices during 2020, which turned into record-shattering prices during the first half of 2021 before returning to more normal levels in the fall and winter (Figure 1).

Montana mills, like many around the country, were limited in their ability to boost production because of labor shortages and supply chain disruptions. However, sales from Montana's wood products industries during 2021 are expected to nearly double those of recent years – with the increases resulting solely from higher prices, not higher production levels (Figure 2).

Timber harvest volumes in Montana, as well as lumber and other wood product outputs during 2021, were estimated

to have changed very little, decreasing slightly from 2020. Private and state land harvests during 2021 changed little. National forests in Montana fell short of their annual timber sale target by 30% despite the strong national demand for wood products and modest gains in delivered log prices paid by Montana mills (Figure 1).

The closure of two larger sawmills – R-Y in Townsend during 2020 and the Idaho Forest Group mill in St. Regis in late 2021 – contributed to overall lower lumber production in the state. Likewise, total forest industry employment in Montana is estimated to have dropped during 2021, with the two mill closures and other facilities challenged to keep full shifts or find additional people willing and able to work.

The outlook for 2022 is fairly positive, with more typical market conditions and federal policy changes that should benefit the forest industry. But there are lingering questions about

log and labor availability. The recently signed Infrastructure Investment and Jobs Act provides additional funding and federal authorities that are anticipated to boost forest management and timber-related activities on federal, state and private lands in Montana and throughout the western U.S.

Over the next five years, \$3.3 billion is being allocated for wildfire risk reduction, including mechanical thinning and timber harvesting, removing flammable vegetation from federal lands, conducting post-fire remediation, and supporting Collaborative Forest Landscape Restoration projects. Wildland firefighter salaries will also get a boost; more firefighters will become permanent, rather than seasonal, employees; and up to half of their work year will be allocated to reducing hazardous fuels. The Infrastructure Investment and Jobs Act also allocates \$2.1 billion toward ecological restoration, including working on federal lands, various grants, matching funds for Good Neighbor Authority projects with states and tribes, loan guarantees and low interest loans for wood products facilities, recreation site and mine restoration, reforestation (i.e., tree planting), and support for collaborative projects to restore water quality and fish passage.

In addition to funding, the Infrastructure Investment and Jobs Act contains a new categorical exclusion for fuel breaks along roads and transmission lines, and codification of the U.S. Forest Service’s existing administrative Emergency Situation Determination. These provisions should enable the U.S. Forest Service to respond more quickly to natural disasters like wildfires and accelerate the pace and scale of restoration and wildfire prevention and recovery activities.

Steven Hayes is a senior research forester and Todd A. Morgan is director of the Forest Industry Research Program at the Bureau of Business and Economic Research.

Figure 1. Montana delivered log prices and U.S. lumber prices, 2000-21. Sources: Random Lengths, Bureau of Business and Economic Research.

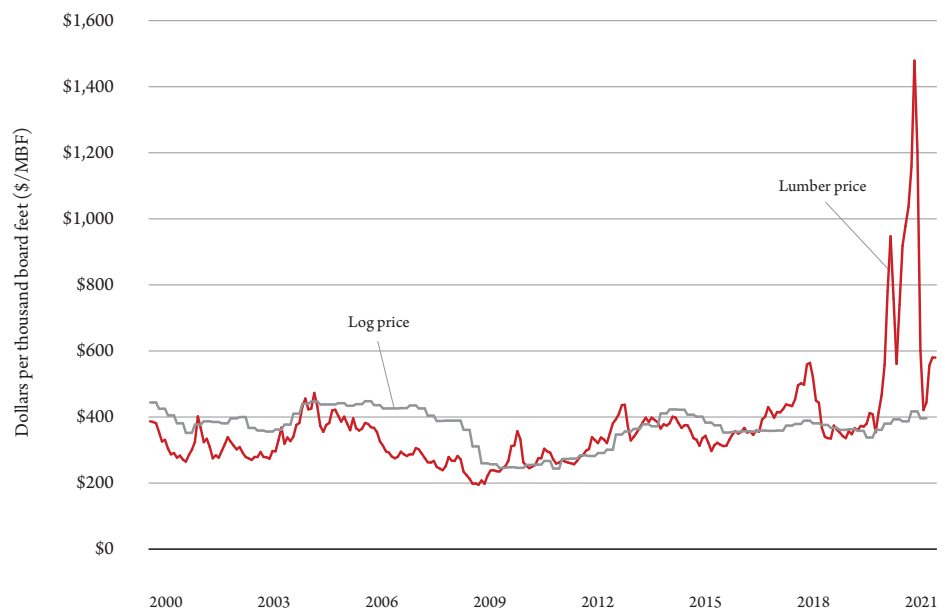
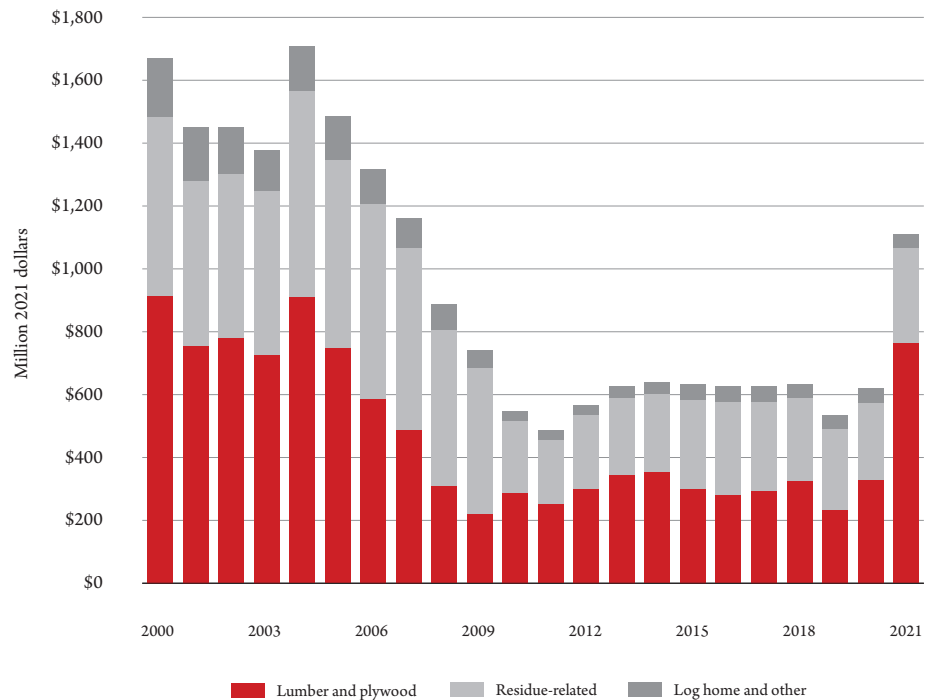


Figure 2. Sales from Montana primary wood products manufacturers, 2000-21. Source: Bureau of Business and Economic Research.



Energy

Montana's Energy and Minerals Future

BY BILL WHITSITT

When the Treasure State became Montana's nickname in the late 1800s, there was little doubt as to why. In 1865, Montana's adopted the motto Oro y Plata (gold and silver) and it remains so today. The treasures of Montana are vast and evolving in importance, which include mineral resources, like the Butte copper needed to win two world wars.

Today our state's treasures include an agricultural abundance for domestic and export markets, as well as timber, coal, hydropower, and oil and gas resources that have been the foundations of Montana's economy, and state and local revenues. This evolution continues, especially in the importance and production of energy and mineral resources.

As times and markets have changed, we've seen declines in state revenues from some traditional natural resource development.

Within sectors, however, COVID-19 and related economic uncertainty has clouded Montana trends in demand, supply

and price. Coal's market and environmental driven production declines from a peak of nearly 46 million tons of annual production in 2015, was most recently reported to be some 26.4 million tons in 2021 – signaling significant unused capacity. Oil and gas well permits continue to be sought and used despite the periodic uncertainty of available services to match drilling and completion schedules. Beyond these, Montana's energy and mineral treasure inventory also includes the large potential and growing production of renewable energy resources. And there is a continuing evolution toward more creativity and high-tech entrepreneurship.

A significant carbon dioxide injection program by Denbury Inc. to enhance oil production from the East Lookout Butte field in Montana and the Cedar Hills South field in North Dakota is on track with the completion of a 105-mile carbon dioxide supply pipeline. Another project captures otherwise flared natural gas at Kraken Oil & Gas well sites in Eastern

Montana. Crusoe Energy Systems uses the gas to generate on-site electricity to power nearby bitcoin mining servers.

An interim Montana legislative committee is investigating with the Department of Energy and others the technical, economic and waste disposal feasibility of small modular, replicable, nuclear reactors that could perhaps make up for some of the reduced coal-fired baseload power Montana consumers have long relied upon. And so-called critical minerals, such as palladium and platinum mined in Montana and used in catalytic converter pollution reduction processes, may have more important futures in the Treasure State. Production from one company, Sibanye-Stillwater, with its two mines alone contributes some \$3 billion annually to the state economy.

Against this background of evolution and creativity, the Bureau of Business and Economic Research is working to remind residents that Montanans lifestyles and the economy are tied closely to energy. The U.S. Energy Information Administration in its most recent comparison year (2019) says Montanans ranked relatively high in per capita use of energy overall (11th among U.S. states), and in what they pay for energy (eighth among states). These trends undoubtedly result in significant measure from our relative temperature extremes and the need to drive long distances. The latter has exacerbated effects of higher and more volatile Montana gasoline prices recently, whether from relatively short-term oil market fluctuations or longer-term inflation factors.

Perhaps the most important way that energy affects daily life and business in Montana is by electricity use. We’ve become accustomed to lights coming on at the flip of a switch, and our homes and businesses being powered at a reasonable cost.

Because of Montana’s historic treasure of abundant generation resources – from coal and hydro to more recent wind generation growth – electricity prices have been relatively low in Montana. The U.S. Energy Information Administration reports that in August 2021, Montana residential consumers paid \$11.63 cents/kwhr for electricity, with the state ranking 40th for those costs among states.

Important long-term work is being done by the Bureau of Business and Economic Research in examining the factors that will determine Montana’s future electricity reliability and costs.

Bill Whitsitt is executive-in-residence at the Bureau of Business and Economic Research at the University of Montana.

Figure 1. Natural resource tax collections, total annual collections, 2010-21. Source: Statewide Accounting, Budgeting and Human Resource System.

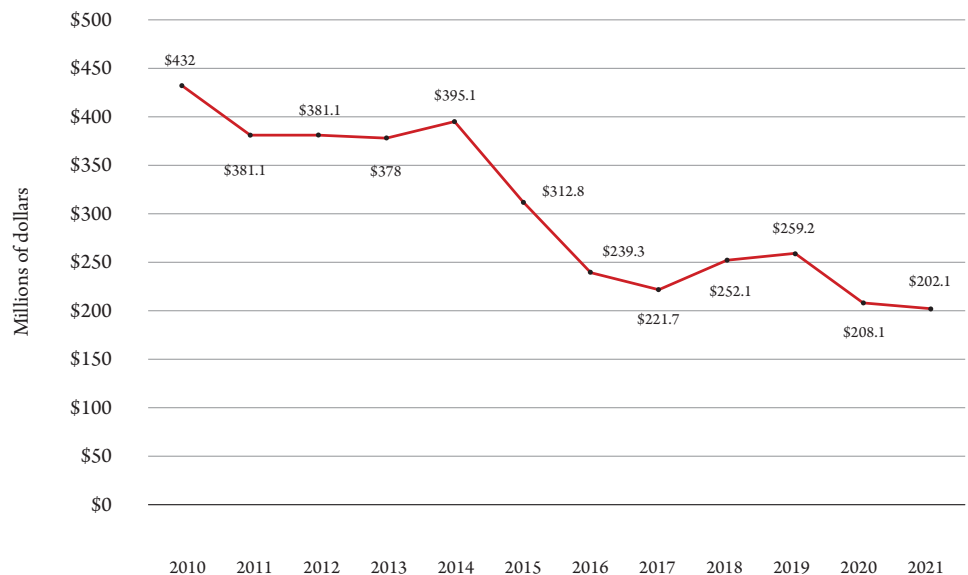
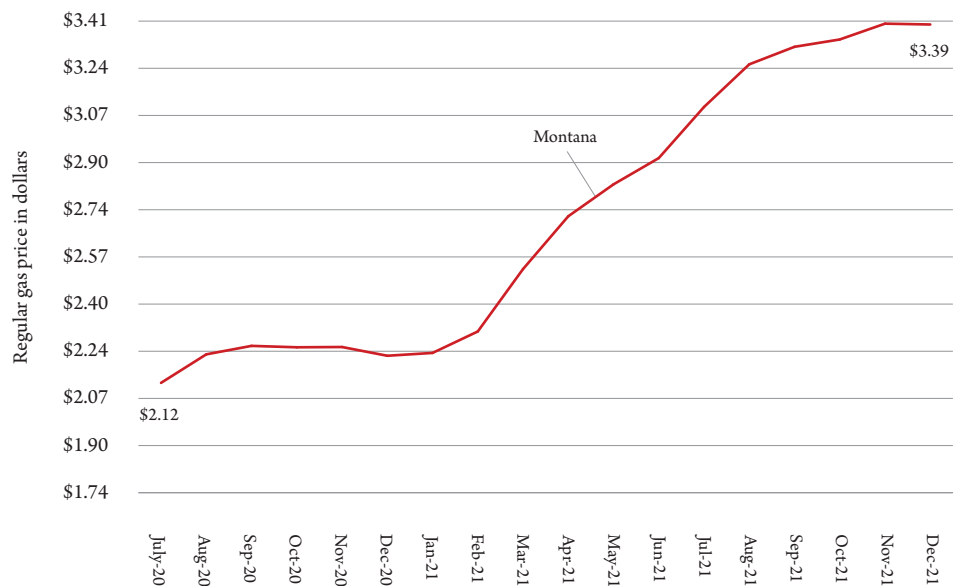


Figure 2. 18-month average retail gas prices. Source: GasBuddy.com.



Manufacturing Shipping and Supply Chain Are Big Concerns

BY ROBERT SONORA

Like most industries, the COVID-19 pandemic has had a profound effect, both positive and negative, on manufacturing. The 2021Q3 National Association of Manufacturers' survey listed as the top three primary business challenges as: increased material costs (86.4%); attracting and retaining workers (80.0%); and supply chain challenges (79.8%). When we compare this to the pre-pandemic survey in 2019Q3, only attracting and retaining workers (69.9%) made the top three. The other two were trade uncertainties (63.4%) and rising health and insurance costs (51.8%). By 2021 trade concerns, largely fueled by tariffs imposed in 2018 and 2019 had fallen dramatically with roughly one-quarter of respondents expressing concern.

In Montana, survey responses mirror the national experience. The annual Montana manufacturers survey, conducted by the Bureau of Economic and Business Research for the Montana Manufacturing Extension Center in the last quarter of 2020, found that the top three concerns for state business in 2020 were: shipping, supply chain problems and material costs (36.1%); the inability to find employees (24.4%); and COVID-19 (21.0%). An October report from

Moody's Analytics states that the supply chain will likely get worse before improving. Some predict it will take from six months to one year for the supply chain to get through its backlog.

Despite the current systemic challenges to the economy, Montana's manufacturing sector has done comparatively well. While manufacturing employment has not yet reached its pre-pandemic trend, it has returned to 2020Q1 levels (Figure 1a). Similarly, though manufacturing output has not yet returned to the pre-COVID trend, it is above the past year's level of production (Figure 1b). Overall non-farm employment in Montana is still below pre-pandemic levels primarily due to losses in the hospitality industry.

Both durable and nondurable manufactured production have contributed to the recovery of the sector, however, it is Montana's nondurable which has seen the quickest turn-around.

Manufacturing in Montana

There are over 3,900 manufacturing firms in operation in Montana paying an average of \$52,111 per year, which

Figure 1. Montana manufacturing employment and output. Source: Bureau of Economic Analysis.

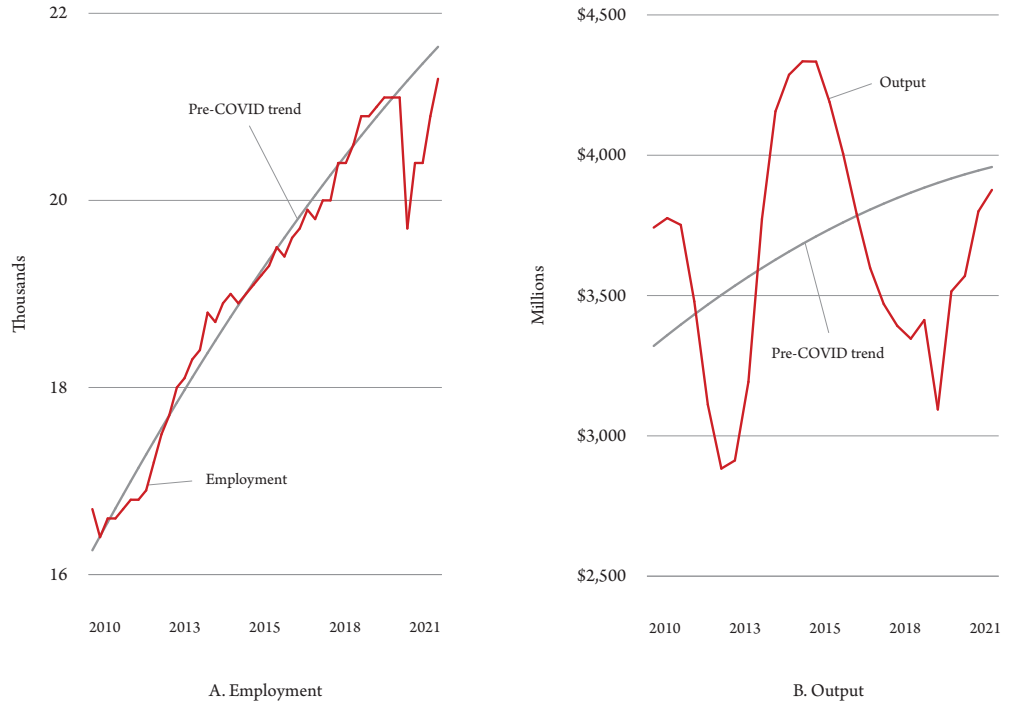
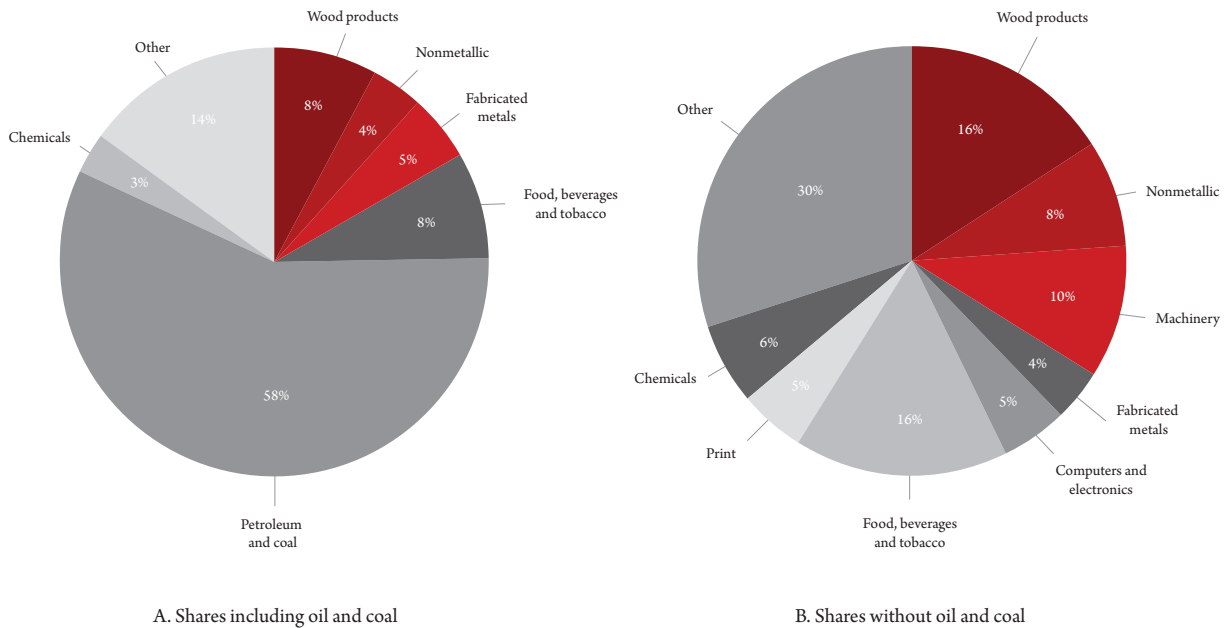


Figure 2. Composition of manufacturing in 2019 (percent of total manufacturing). Source: Bureau of Labor Statistics.



is 11.5% of the state average. Manufacturing contributed about 6.1% of Montana's total output or \$3.1 billion in 2020. Compared to the state average, manufacturing employment and total income have outpaced the state average.

The largest Montana manufacturing industry in 2019 was processing crude oil and coal products. Petroleum and coal products (primarily oil refining) accounted for 58% of total manufacturing in 2019 (Figure 2a). However, the value of mineral production is closely tied to market commodity prices, which are subject to large fluctuations. If we remove this sector from the data, food and beverage, and wood product

manufacturing are the largest sectors, each accounting for about 16% output (Figure 2b). Fabricated metals (9.6%), nonmetallic, and chemical manufacturing round out the five largest sectors.

Robert Sonora is associate director and director of health care research at the Bureau of Business and Economic Research at the University of Montana.

Travel, Tourism and Recreation

Staffing Shortages Cause Concern

BY JEREMY SAGE

As the COVID-19 pandemic became a reality across the globe in early 2020, its impacts were swiftly felt throughout the country, with Montana not being spared at the outset. In April of 2020, when visitation typically begins to return to Yellowstone National Park, the park remained closed. In May, it recorded just over 10% of its typical volume. Likewise, Glacier National Park recorded no visits in these two months. But as domestic travel restrictions eased in June of 2020, many Americans fled to the wide-open spaces offered by Montana, its two parks and places in between.

Beginning in July 2020 and running through October 2021, Yellowstone National Park welcomed more monthly visitors than it had in each respective month in 2019, setting monthly records nine times (Figure 1). By the end of September 2021, Yellowstone had already broken its previous annual visitation record of 4.26 million visits; more than 4.8 million are expected when final counts are tallied for 2021.

An arguably more challenging situation unfolded for Glacier National Park; the east entrance remained closed for much of 2020 and into March of 2021. However, it too saw large volumes of visitation. As of September, annual visitation was already the second highest on record and may ultimately top the highest ever at 3.3 million visits (Figure 2).

With the national parks and other open spaces seeing large volumes of visitation, demand for lodging and other sectors of tourism also experienced an increase. A lodging facility use tax is collected across the state and typically sees an increase year-over-year of roughly 7%, with the summer quarter garnering about 45% of total collections. In 2021, the summer quarter was 21% above what would have been expected had this trend continued.

Montana's tourism industry is a major sector of the state's economy; however, visitors arrived while in the midst of continued labor and staffing challenges at many of the businesses required to support tourism.

In a survey by the Institute for Tourism and Recreation Research of more than 300 tourism related businesses, respondents indicated their customer and sales volumes were up 18% and 21% respectively over 2019. Meanwhile, 52% of businesses reported being short-staffed, with the primary areas of shortages being customer and public facing positions, as well as other supporting staff in service-based professions. In response to shortages, the most frequently cited action was the reduction of products or services provided, followed closely by a reduction in operating hours.

In the face of staffing shortages, businesses have a host of potential avenues to attract applicants to open positions and

Figure 1. Yellowstone National Park visitation. Source: National Park Service.

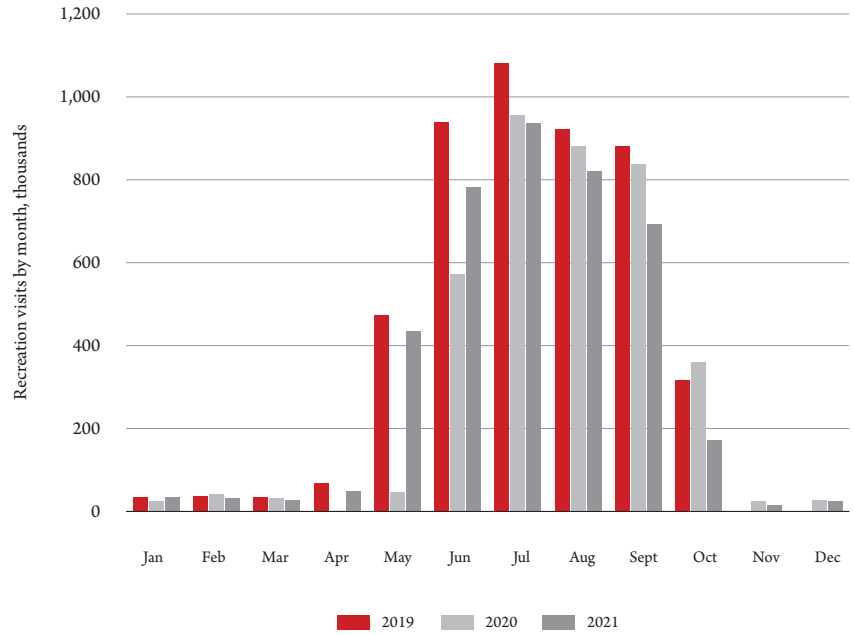
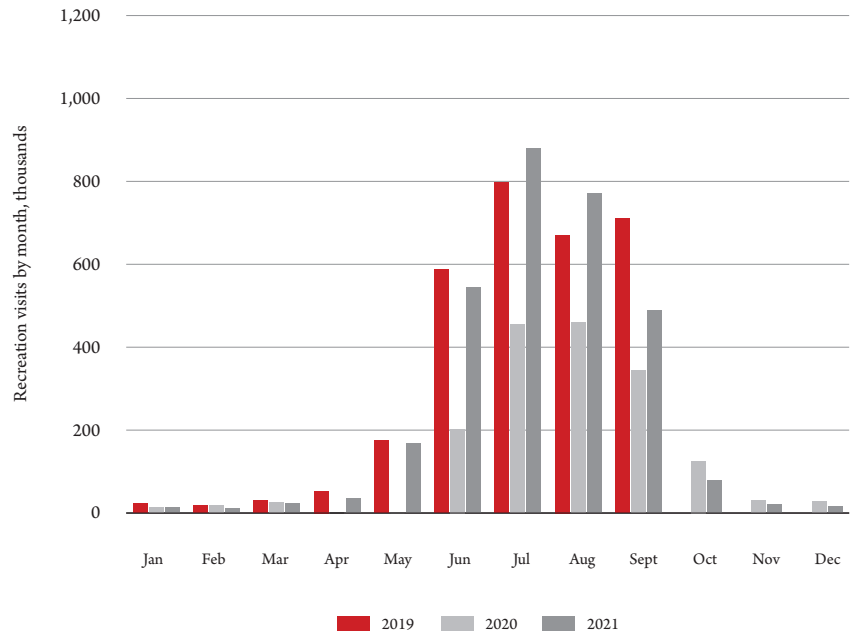


Figure 2. Glacier National Park visitation. Source: National Park Service.



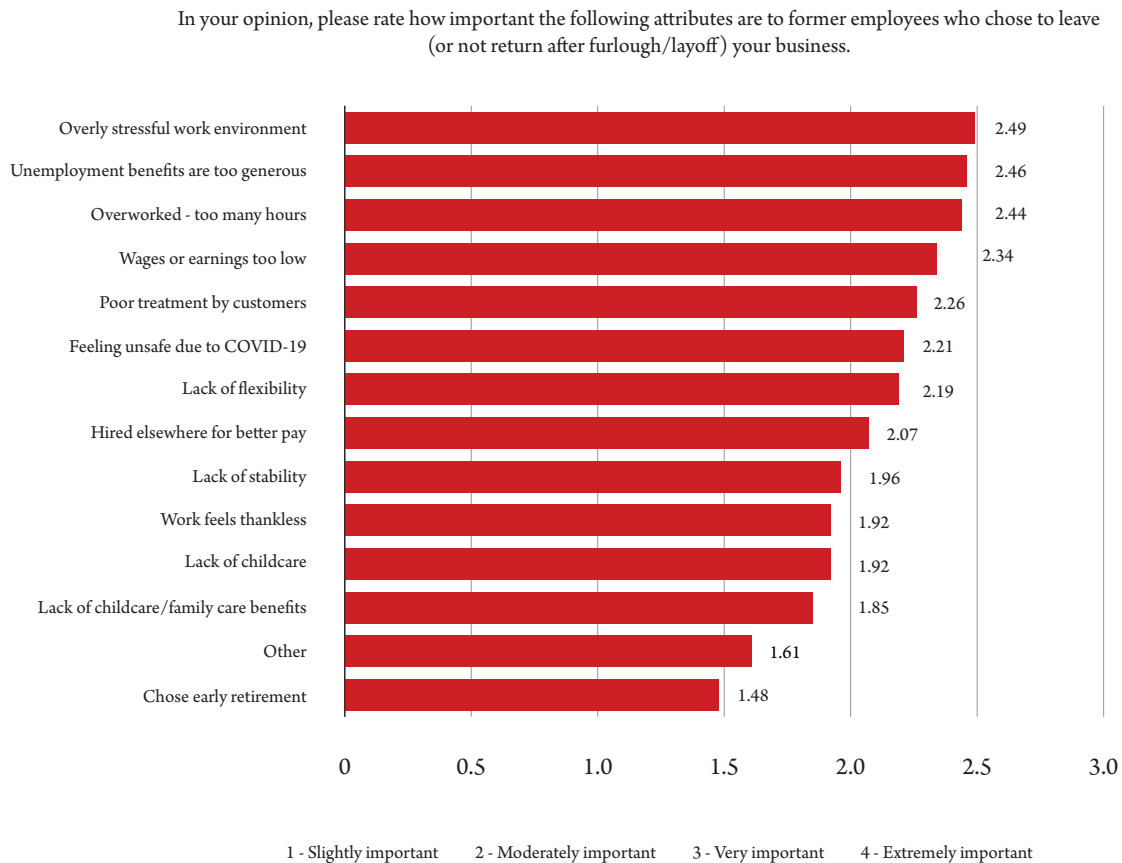
retain their current employees. Those actions most likely to be taken by respondents were increased wages and flexibility in hours.

From the perspective of these employers, the most important reasons for employees leaving or not returning after a furlough include the overly stressful work environment, unemployment benefits, excessive hours and low wages (Figure 3).

Moving into 2022, COVID-19 leaves uncertainty in the travel industry quite high. However, optimism among business owners also remains very positive, with strong majorities of respondents expecting positive growth over 2021 in both customer and sales volumes.

Jeremy Sage is an associate research professor in the department of geography and the interim director of the Institute for Tourism and Recreation Research at the University of Montana.

Figure 3. The importance of staffing shortage concerns. Source: Institute for Tourism and Recreation Research.



Health Care

COVID-19 Drives Exodus of Health Care Workers

BY ROBERT SONORA

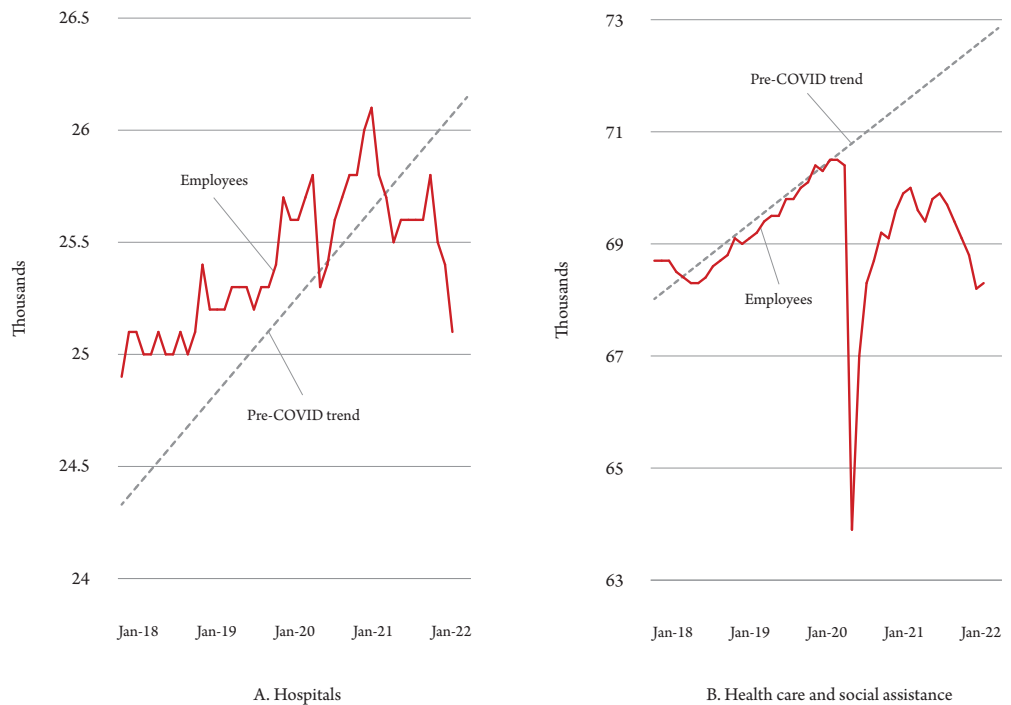
As in 2020, the health in Montana and globally was dominated by the COVID-19 pandemic. The positive news surrounding the general dissemination of a vaccine has been tempered by the negative impacts new variants of the disease have had on both Montana health outcomes and the economy. As of December, in Montana there were roughly 176.2 cases per thousand diagnosed with the disease and 2.4 per thousand residents died. Montana has been through two significant COVID-19 waves.

The first wave was largely associated with the Alpha variant. Between October and November, the state recorded over 1,000 new cases per day. The second wave differed in that a vaccine was largely available, but the more virulent Delta

variant became the predominant cause of new cases and deaths among unvaccinated Montanans.

Since July, there have been about 42,000 Montanans hospitalized for COVID-19, of which over 90% are unvaccinated according to the Centers for Disease Control and Prevention. Using the same method as the Kaiser Family Foundation, this translates into a cost of \$33.8 million in preventable COVID-related hospitalizations since July 1, 2021. This calculation does not include lost wages due to either hospitalization or caring for a sick relative or friend, nor does it include the cost of retrofitting hospitals to cope with the influx of COVID-19 patients. Moreover, according to recent research, roughly 25% of COVID-19 patients will

Figure 1. Montana employment: hospital, health care and social assistance. Source: Bureau of Labor Statistics.



have long COVID, which will have a long run economic impact.

Just like the rest of the sectors in the economy, health care has experienced a substantial number of workers leaving the field since the beginning of the pandemic. Figure 1a shows the total employment in Montana hospitals compared to the pre-COVID trend and Figure 1b shows the same for health care and social assistance.

Compared to national trends, hospital employment looks relatively positive, but there has been a considerable outflow of workers in the broader health care and social assistance sector, on par with national trends. Nationally, the quit rate of workers in this sector is about 3% per month – normally it is about 2%. This increase began in May 2020 at the beginning of the first COVID-19 wave and then accelerated during the second Delta wave.

Many workers are expressing moral distress about not being able to take the necessary course of action when providing care. This will have longer term implications as Montana

has one of the oldest populations in the country and is also experiencing an influx of residents from other states. Two new medical schools, one in Billings and the other in Great Falls, may relieve some of this pressure, if the existing clinical resources are not stretched too thin.

Lastly, there has been a considerable cost associated with forgone care. According to an early survey in 2020, 41% of respondents reported forgoing medical care and 25% stated they did not visit the hospital due to fear of catching COVID-19.

The pandemic will have a long-lasting impact on both global health and the economy. Problems associated with each have been hiding in plain sight for many years and their shortcomings have been exposed by the pandemic.

Robert Sonora is associate director and director of health care research at the Bureau of Business and Economic Research at the University of Montana.

Real Estate and Construction

Boom or Bubble?

BY DEREK SHEEHAN

The home price escalation in 2021 feels a bit like the housing market of the early 2000s. The question is whether this is a speculative bubble or a boom driven by demand. A proper understanding of Montana's current housing market will require a more in-depth analysis than is shown here. For now, we'll settle for a comparison of key market dynamics today versus what we saw in 2007.

One fundamental evaluation is the relationship between changes in housing prices to changes in rents, roughly owner and renter housing costs. Many economists expect what we saw from 2011 to 2019 (Figure 1). Home prices and rents fluctuate year-to-year but follow similar trajectories over time dictated by the economic fundamentals – supply and demand of housing. A departure from this relationship is

one indication speculation is driving housing prices into an unsustainable bubble.

We can see in Figure 1 that a deviation from this relationship occurred in the lead up to the Great Recession, peaking in 2007 where prices were 22.43% higher than rents. In 2021, prices are 18.29% higher than expected rents. Thus, Montana is approaching 2007 levels. However, there are two key differences between housing markets in 2006 and 2021. First is housing construction and interest rates.

What Is Different About 2021?

The first difference is housing construction occurring before the peak, from 2000 to 2007, and from 2011 to 2021. From 2000 to 2007, Montana added an average of 7,390 new

housing units each year. This means there was substantial building activity and a growing supply of homes during the boom. This led to a decline in prices after housing demand evaporated in 2008. Prices continued to decline until 2011. Since 2011, Montana has produced roughly 4,170 housing units a year.

These two periods depict different levels of construction activity (Figure 2). The current period's surging prices are likely due to economic fundamentals – surging COVID-related demand meeting a lower supply of new homes.

The second difference is the increased housing demand as a result of historically low interest rates. In November 2021, the average 30-year fixed mortgage rate in the U.S. was 2.98%, about half what it was in November 2007 (6.24%). This period of low interest rates is likely spurring some of this increased demand for homeownership, as it has never been cheaper to finance a home.

Given the record high housing demand, low supply and low interest rates, we can expect continued housing price growth in the near term. Price growth should slow down due to a return to normal demand, supply responses, rising interest rates, or a combination of these three. At least for

now it appears we are in a fundamentals driven housing boom rather than a speculative bubble.

Derek Sheehan is an economist at the Bureau of Business and Economic Research at the University of Montana.

Figure 1. Housing price index vs. rent index, 2005Q1-2021Q2. Sources: Federal Housing Finance Agency, U.S. Census Bureau American Community Survey, BBER.

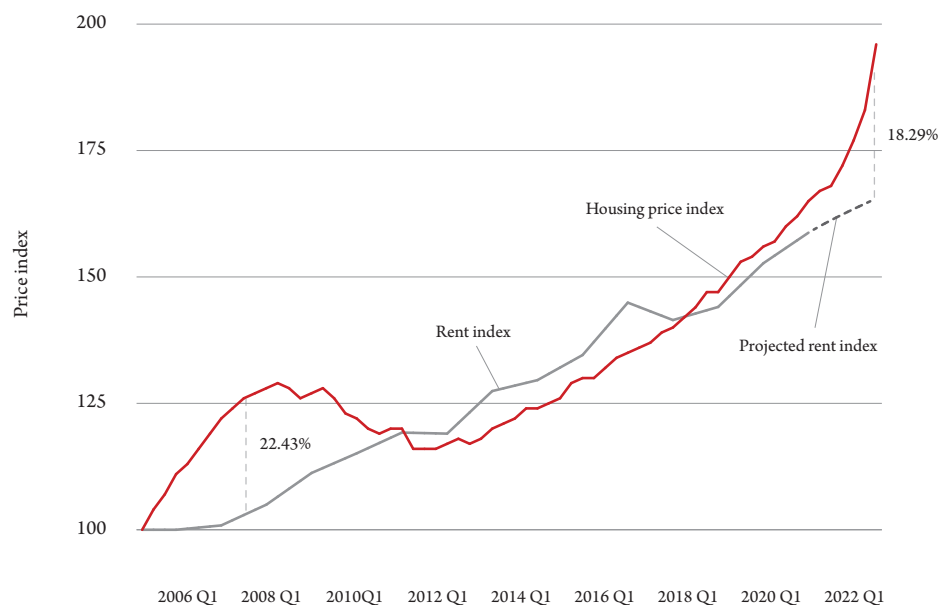


Figure 2. Montana change in housing units. Source: U.S. Census Bureau.



Transportation and Logistics

The Roller Coaster Ride Continues

BY SIMONA STAN

One thing that most everybody agrees on is that the supply chains are broken. That is, the systems of moving goods from factories and farms to end consumers are tied up and bottlenecked and therefore fail to deliver the expected products. In a world in which we are accustomed to plenty, we are encountering shortages across the board from daily home commodities, such as toilet paper, to home appliances, furniture, toys, cars, construction materials, industrial equipment and even energy.

Prices have escalated by 6% year-over-year and consumer demand has led to a 20% jump in imports. There are problems at every step in the supply chain, from a lack of production, to imports stuck in ports, to shortages of space in warehouses and so on. The pandemic has shown how much the global supply chains lack in resilience.

While most news about the current supply chain crisis is bad, logistics and transportation companies are by and large emerging as winners. Taken as a whole, the ocean shipping industry is on track to make more profit in 2021 than it has in the past decade. Shortages in shipping capacity and containers have led to extreme fee hikes. For example, shipping a container from China to the West Coast cost less than \$2,000 in 2019, but in the summer of 2021, costs rose to \$20,000 before falling below \$15,000 in November.

The trucking industry, which hauls about 75% of goods in the U.S., is dealing with capacity constraints as well, in terms of truck drivers, trucks and trailers. However, while facing increased fuel and labor costs, in 2021, profitability has soared to nearly double the pre-pandemic profits of 2019. For example, while the S&P 500 index is up about 25%, J.B.

Hunt Transport Services is up 46%, Old Dominion Freight Line has climbed 85%, and Knight-Swift Transportation has advanced 40%. C.H. Robinson Worldwide Inc., one of the country's largest warehouse and logistics companies, booked \$614 million in profit in the first nine months of 2021 – a nearly 30% jump over 2019.

The biggest questions are: When will the supply chains go back to normal and what can be done to fix the situation? Most expect the disruptions to continue well into 2022 and possibly into the following year. Besides the increased demand and COVID-19 disruptions in supply, it is important to consider that logistics systems are expensive and designed to run at high utilization. So, there is very little extra capacity to deal with significant fluctuations in supply and demand, which results in backlogs that explode in nonlinear ways.

Adding capacity at any step in the logistics systems (ships, port operations, trucking, warehousing, etc.) moves bottlenecks to next step. Besides being expensive, time consuming and risky, adding capacity in an effective way would require a level of coordination led by a central authority, which is

currently missing. For example, the American Trucking Association estimates that the U.S. is short 80,000 truck drivers. As of November, in Montana there are about 1,250 truck driver jobs available with an average salary of \$76,000 per year. However, many sources suggest that the true problem is not a lack of drivers, but the ability to retain them. Many drivers don't find the compensation sufficient for the long hours and weeks away from home.

While lack of capacity is often blamed for problems, a more serious issue is mismanagement and outdated information systems. As the demand for imports ebbs in early 2022, freight prices are likely to continue to fall. Companies that tried to expand to meet demand might find themselves with excess capacity on their hands and suffer financial consequences.

Simona Stan is a professor of marketing and the Wilson Logistics faculty fellow in the College of Business at the University of Montana.

Technology and Innovation

Pandemic Has Not Slowed Montana's Growing Tech Sector

BY CHRISTINA QUICK HENDERSON

Montana's tech industry continued its course of steady growth this year despite the disruption of the pandemic. The state's high-tech companies generated a record \$2.9 billion in revenues in 2020 – up from \$2.5 billion in 2019 – according to a survey conducted by the Bureau of Business and Economic Research. Tech grew seven times faster than other sectors in the state.

Tech businesses across Montana attracted significant out-of-state investments in 2021.

- IT consulting firm Helix Business Solutions in Dillon was acquired by Speridian Technologies in February.
- Autonomous work drone startup Skyfish, based in Stevensville, announced in June that it raised \$20 million in a series seed funding round.

- Neuro-ID, a Whitefish-based company that provides behavioral analytics for online businesses, closed one of the largest series B rounds in state history in November at \$35 million.

Montana entrepreneurs have also benefited from a surge in venture capital dollars within the state. Bozeman-based venture firm Next Frontier Capital announced the close of their \$80 million fund III in April 2021. Since its 2015 founding, Next Frontier has funded more than 35 companies, including investing \$29.1 million in its Montana portfolio of 20 companies.

Since its founding in 2019, Two Bear Capital in Whitefish has invested about \$75 million between their seed fund and a soon-to-be announced main fund with more pending. With

a special interest in biotech and bioinformatics, Two Bear Capital has a total of 14 companies under their belt, including the Montana firms FYR Diagnostics (Missoula), Truwl (Whitefish), Inimmune (Missoula), and Verafi (Whitefish).

In addition to the jobs created by high growth startups, many of Montana's largest tech firms with hundreds of employees continue to expand their footprint in Montana, including Applied Materials in Kalispell; ATG, a Cognizant company in Missoula; onXmaps in Missoula and Bozeman; PFL Tech in Livingston and Bozeman; and Zoot Enterprises in Bozeman and Billings.

As the pandemic has accelerated a shift toward remote and distributed work, more tech workers and companies are relocating to Montana. One of the highest profile examples in 2021 was the announcement in May that cloud-based data warehousing company Snowflake – the largest software IPO in history – would move its corporate headquarters from California to Bozeman.

While Montana's thriving tech sector is good news for the economy, leaders will need to address three challenges to ensure future growth.

1. Housing

Shortages of affordable housing, particularly in tech hubs like Bozeman and Missoula, have become a significant problem for employers seeking to attract and retain workers. Creative solutions are needed to ease this pain point or companies will be forced to slow job growth in Montana.

2. Workforce

Finding enough skilled talent has been one of the biggest barriers to growth for Montana high-tech firms for years and the headwinds have only gotten stronger amid the pandemic. Companies are finding fewer experienced candidates and are having to invest more time and money in recruiting them.

3. Education

Tech is a relatively new sector in Montana's economy and one that is unfamiliar to many Montanans. Teaching tech skills like coding in schools and enacting policies that support technology education statewide, including in rural and tribal communities, will ensure more Montana families can benefit from the high paying job opportunities in this industry.

Christina Quick Henderson is executive director of the Montana High Tech Business Alliance.

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