MONTANA BUSINESS QUARTERLY

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2023 MONTANA ECONOMIC REPORT

ANALYSIS AND ASSESSMENT OF
MONTANA'S ECONOMIC PERFORMANCE

MESSAGE FROM THE DIRECTOR

OF THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH

If we've learned anything over this pandemic experience it is this – opportunities to interact and share information and insights with our peers are priceless. And one of the best opportunities in many Montana communities is right before us, as we bring to you, for the 48th consecutive year, our Economic Outlook Seminars. Our programs have always highlighted the one thing that all businesses and organizations share – a stake in how the economy performs.

We've crafted this 2023 Montana Economic Report to set the table for that discussion. These pages are devoted to what is quite possibly the most under-reported story in Montana: the state economy. Our economic environment is changing as these words are written, and you can get a sense of how those changes might affect your household or business from the information here.

Being director of the BBER gives me the privilege of running to the front of this parade, but credit for this report should go to where it is due. I would start with each of the authors for crafting the content that is the essence of what we do. It has always been a privilege to work not only with my BBER colleagues in authoring this report, but also those from other parts of the University of Montana, our friends from Montana State, and those from other organizations. Their expertise adds greatly to the product.

A major thanks is also due to the folks who put it all together. I would like to thank Rita Barkey for her meticulous editing, Jayme Fraser for the superb layout and design, and Shannon Furniss for skillfully directing all of our efforts. We are all proud of what you do.

Please let us know if there is anything we can do to improve these reports in the future. I look forward to seeing you at our seminars. Have a safe and prosperous 2023.

Patrick M. Barkey
Director
University of Montana

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Photo Courtesy of the National Park Service

Can Montana Avoid the Next Recession?

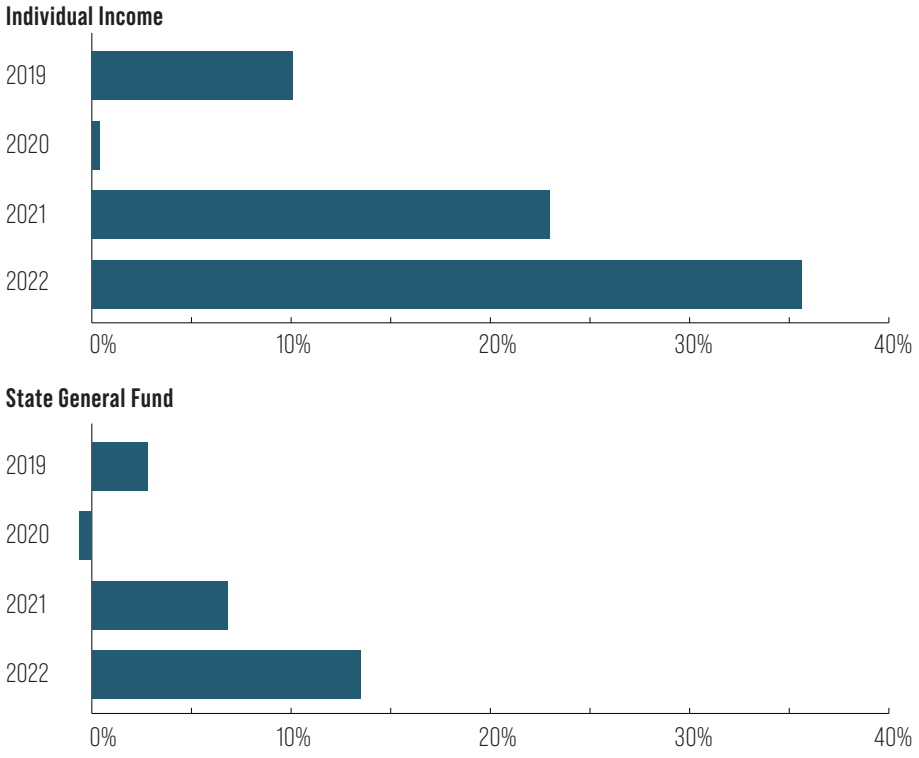
BY PATRICK M. BARKEY

The Montana economy enters the new year with plenty of momentum, as the still surging state tax collections will attest. Yet it is hard to remember a time when current economic performance was less important as a determining factor in the likely direction of the economy in the months ahead, as growth in the global and national economies becomes increasingly fragile. With the winds of economic change all about, the question for Montana increasingly becomes, what kind of recession is in our future?

The Overachieving Montana Economy

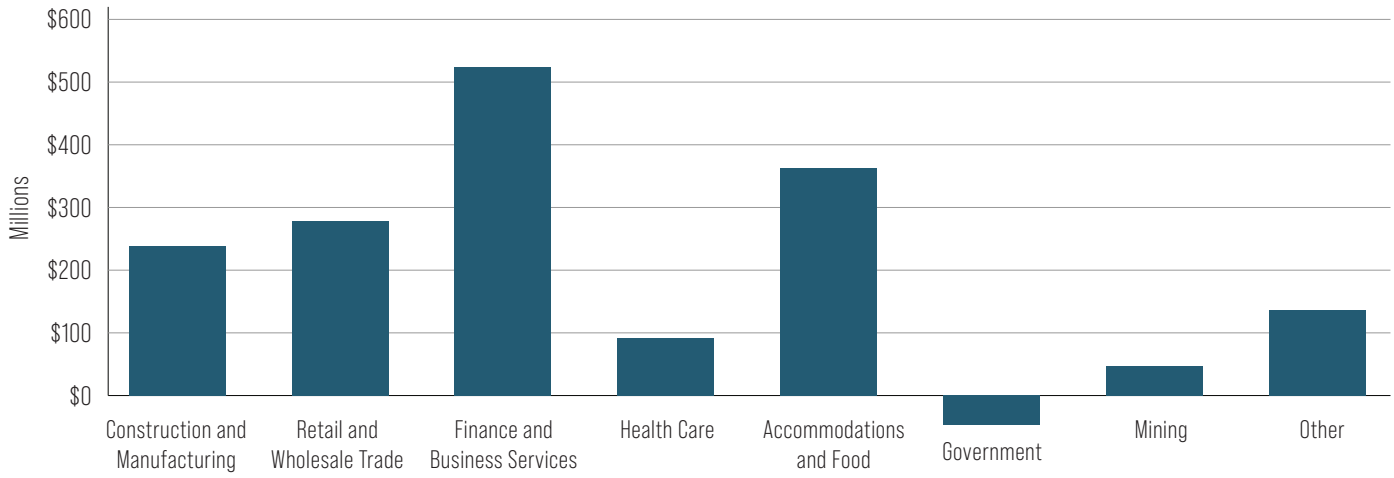
The Montana economy turned in another blistering growth performance in 2022. The super-heated growth showed up most definitely in state tax collections, which far surpassed projections, helping to produce a $1.7 billion revenue surplus at the mid-point of the calendar year. The revenue from the state's personal income tax in fiscal year (FY) 2022, which collects nearly two-thirds of general fund revenue, surpassed $2 billion. Whereas "good" growth in revenues might previously have been thought of as anything over 5% to 6% in a fiscal year, the state's growth in

FIGURE 1 GROWTH IN MONTANA REVENUE COLLECTIONS BY FISCAL YEAR, PERCENT, FY 2019-22



Source: Montana Department of Revenue.

FIGURE 2 GROWTH IN INFLATION-ADJUSTED EARNINGS BY INDUSTRY, MONTANA, 2020-21



general fund revenues in FY21 and FY22 of 21% and 34%, respectively, have been orders of magnitude larger than anything in recent memory.

What's driving that growth is hiding in plain sight in many communities across the state. What began in 2021 as a rebound from the disruptions of the pandemic has pushed past pre-Covid activity levels in many industries, most notably those connected to housing, visitor spending, and technology-related services. Much of the faster growth has taken place in labor-intensive industries, putting extraordinary pressure on labor markets that were already strained by strong demand.

Less impressive was the performance of two key sectors of the state economy: mining and health care. The stagnation in oil drilling and production activity has been keenly felt in eastern Montana, extending even to Billings. And the pandemic and its aftermath have arguably impacted hospitals and health care more than any industry in the state, particularly in the attraction and retention of workers.

What's Ahead

Our ability to assess the state and local economies in the second half of 2022 is hampered by the limited data that are available. We know that state income tax collections remain strong and that labor markets remain extraordinarily tight, suggesting no meaningful change to our economic health in recent months. But the rapid rise of interest rates, the continued pain of raging inflation, and the falling of global commodity prices are shifting the sands beneath the foundation of that strong growth.

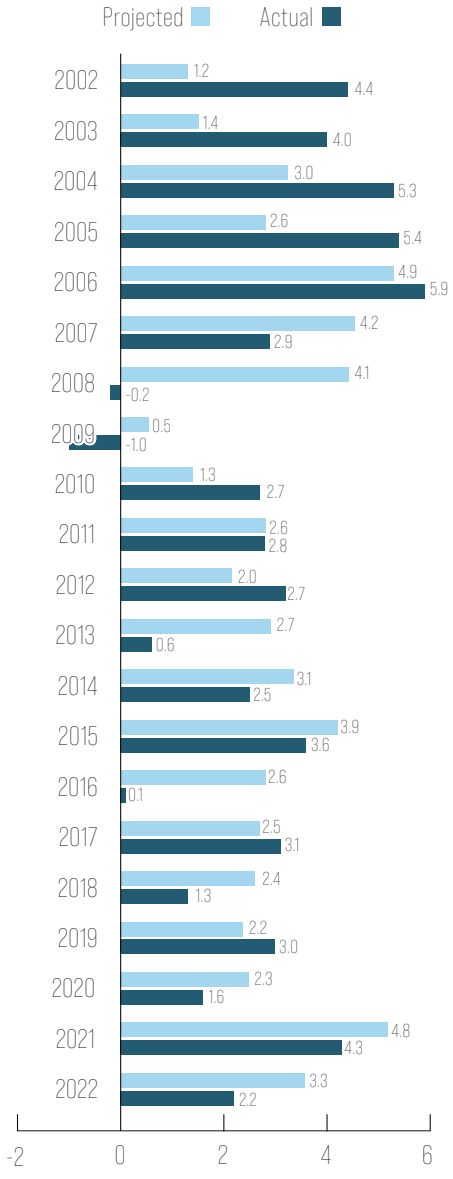
One of the first to feel those changes will be the state's housing industry, including the real estate brokers, lenders, and developers. Conventional 30-year mortgage rates exceeding 7% have cut the flow of loan applications to a trickle and have sent sales of existing homes sharply downward. Montana will not escape the slowdown that is now underway.

On the other side of the ledger, however, are shifts in the economy that may work to our advantage. One of those is addressed in the theme of the 2023 Outlook Seminars – the prospect of a permanent change in our attractiveness to migrants from other states. Stagnation in national economic growth might be noticed here less if recent mobility trends continue and bring more wealth and investment to our state. ■

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

Slowdown in 2022 Was Early

FIGURE 1 PERFORMANCE OF BBER FORECAST ACTUAL AND PROJECTED GROWTH IN REAL NONFARM EARNINGS, PERCENT



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

BY PATRICK M. BARKEY

The Bureau of Business and Economic Research has had more than a bit of good luck in forecasting over this down/up pandemic cycle in the Montana economy. In 2019, no one foresaw anything like what happened in the spring of 2020 when the economy went into lockdown and quarterly growth rates in economic output whipsawed in ways no one had ever experienced.

The BBER's good fortune was twofold. First, ours is a forecast for the calendar year, and the violent swings in the economy within 2020 tended to offset to produce a yearly total that was not so unusual. Second, we forecast income – specifically, inflation-corrected nonfarm earnings – and the downturn in the economy in the pandemic recession was almost entirely a jobs phenomenon. Income grew in 2020, as shown in the figure, by a respectable 1.6%. Thus, our forecast of 2020 was only slightly over optimistic, and our forecast of 2021 was quite good, undershooting actual growth by just 0.4%.

But the earlier arrival of slower growth in the economy in 2022 did surprise us. After correcting for inflation, which was significant, actual growth is coming in at about 2.2% for the full year, considerably lower than the 3.3% projected in the BBER forecast made in December 2021. ■

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

Stories of Growth Around the State

BY PATRICK M. BARKEY

It was quite a ride, but the down/up roller coaster of economic growth set off by the pandemic is now largely over in Montana's cities and regions.

During 2020 and 2021 there was a sense of every community sharing the same experience – the shocking declines as the pandemic hit, and the surging gains as normality eventually arrived. And while much about that experience remains fresh, the divergence in growth between places has returned. Expectations for the coming year are varied as well.

Many of the factors that have been important in shaping the pattern and pace of economic growth around the state are beginning to change. Money is no longer cheap – interest rates have surged right along with inflation. A dangerous war in eastern Europe has disrupted energy and agricultural markets. And the federal government has moved from neutrality to outright hostility to fossil fuel investment.

Let's begin our assessment of growth in Montana's cities and regions with a review of growth heading up to the present. As is always the case with smaller geographies, the most comprehensive data are not up to date. But together with the partial information that is more recent, we can assess the most important trends.

Growth Surged Almost Everywhere in 2021

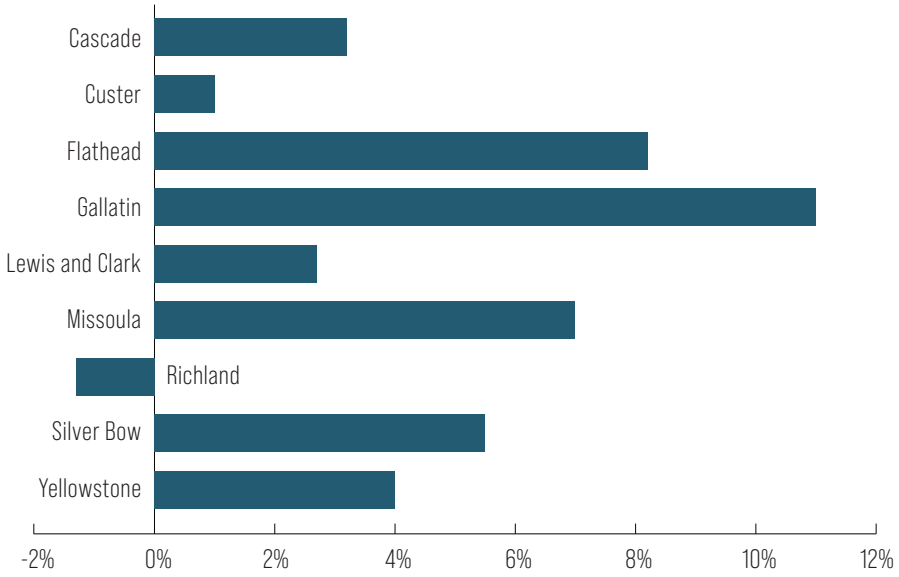
With one important exception, economic growth surged in 2021, as measured by inflation-adjusted nonfarm earnings. The exception was the eastern oil-patch counties, which continue to tread water as much of the national investment in oil production was directed elsewhere. The statewide average growth was over 5.3%, which was the highest since 2006. As can be seen from Figure 1, Flathead, Gallatin, and Missoula County growth was well above average. All of these growth figures are net of inflation.

What drove growth in 2021, of course, was the reopening of the economy after the pandemic. But more than that simple explanation was at work. 2021 was a huge year for visitor spending, with the counties adjacent to Glacier and Yellowstone National Parks seeing much of that surge. Evidence of red-hot housing markets was

also apparent, especially in the areas of the state with stronger in-migration from other states. Not just construction, but also banks and lending institutions had a very strong year.

How did that growth change in 2022? We have only incomplete information to address that question. Total wages paid in the first half of 2022 showed a moderation in growth, as shown in Figure 2. Wages are only about 60% of earnings, however. A different story is told by Montana income tax collections, which have continued to exhibit strong growth right up to the current time.

FIGURE 1 GROWTH IN INFLATION-ADJUSTED NONFARM EARNINGS, SELECTED COUNTIES, 2021



Source: U.S. Bureau of Economic Analysis.

Growth Around the State

A closer examination of the trends in the different regions of the state gives more insights on the evolution of growth.

Gallatin County

Once again the state's fastest growing economy has turned in a blistering growth performance. Now solidly established as the second-largest economy in the state, Bozeman's growth has pushed west into Belgrade, Manhattan, and Three Forks with strong construction activity and retail growth. Billings Clinic's new 58-acre medical campus expands health care's footprint in the economy, a sector less represented in the past. The recently expanded airport is already making plans to expand further.

Just **10 percent** of state growth occurred outside the seven largest counties.

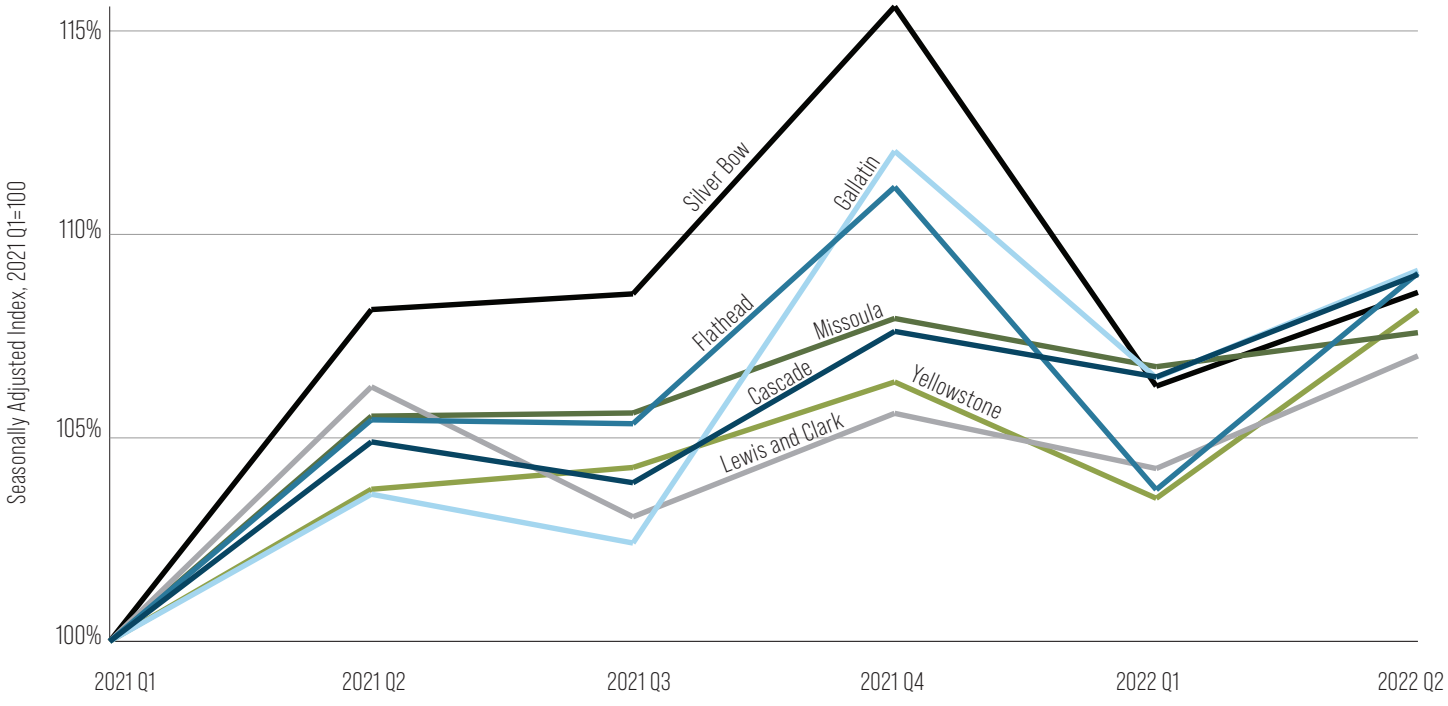
Pressure on housing and labor markets has been intense. Many of the businesses that serve the surge in visitors and tourists are labor intensive, with some forced to curtail hours or cancel expansions due to workforce issues. Significant growth in residential construction, especially in multi-family units, has not yet softened growth in house prices and rents, among the highest in the state.

Strong tech growth, a continuation of strong visitor spending, and the area's new attractiveness as a destination for those relocating from other states are expected to power strong growth into the coming years.

Flathead County

Adjacent to Glacier National Park, Flathead County's growth surge is not as long-lived as what has occurred in Gallatin County, but with more than 8% inflation-corrected nonfarm earnings growth in 2021, it is almost as strong. The traditional drivers of the county's growth – visitor spending and construction activity were clearly behind the recent surge. But so was a return to growth in

FIGURE 2 INFLATION-ADJUSTED REAL WAGES BY COUNTY, 2021 Q1 TO 2022 Q2



Source: Quarterly Census of Employment and Wages.

health care, which had surprising weakness for 2018 through 2020.

The Flathead Valley has also seen increased activity in tech-related companies. Workers' earnings in professional and technical services surged by more than 20% in 2021, with much of that technology driven. There is also evidence that the new trend in arrivals from other states with higher incomes has been a factor in recent county growth.

Missoula County While growth in Missoula County has been respectable for more than five years, a noticeable acceleration in its economy commenced in 2021, when inflation-adjusted nonfarm earnings grew by 7%. The biggest contributor to the recent growth was a big expansion in its visitor spending-related industries, which helped produce a significant expansion in hotel and restaurant capacity.

That surge added to already robust growth in Missoula's tech employers, and a return to more normal levels of growth in health care. Residential construction is healthy in Missoula as well, but not quite as robust as Gallatin or Flathead counties.

Cascade County The Cascade County economy has upshifted to a faster growth trajectory in recent years, pushing inflation-adjusted nonfarm earnings growth to 3.3%. That was the fastest growth since 2006. Growth in 2021 was spurred by new building construction in both residential and commercial projects. The new medical school's construction is just one of several projects underway.

The continued good performance of Great Falls as a trade center to the larger Golden Triangle area supports the notion that the financial health of area agriculture producers remains reasonably good, despite weather-related challenges to production.

Lewis and Clark County The state's capital region saw higher than average levels of activity associated with the unprecedented growth in federal transfer payments related to pandemic stimulus programs. Growth decelerated to a still respectable 2.7% in 2021 in inflation-adjusted nonfarm earnings as those activities wound down. After experiencing some challenges at the end of the last decade, the county's retail trade sector has performed much better and has helped it capitalize on the surge in visitor spending in the last year and a half.

Silver Bow County Butte-Silver Bow's 5.5% growth in inflation-adjusted nonfarm earnings in 2021 was a welcome interruption to the three years of negative growth that immediately preceded it. That kind of volatility is not unknown in the corner of the state's economy with the highest exposure to global commodity prices. Mining earnings, as might be expected, played a role in the turnaround, but strong growth in visitor spending-related industries played an important role as well.

Yellowstone County The state's largest regional economy also has the largest geographical footprint of any other Montana city, serving markets in portions of four different states. That is one reason why the Billings area had a subpar economic performance for the latter half of the previous decade, particularly in the immediate wake of the Bakken oil field's bust. Its steady improvement in the last two years has followed a recipe shared by many parts of the state: steady improvement in core industries with a dose of strong visitor spending.

One key sector that did not improve was health care, but the sluggish growth of the state's largest health care cluster fared no worse than elsewhere in the state. On the plus side, the areas of banking and finance, retail, wholesale and transportation-related businesses enjoyed better growth. A new spark of growth came from the city's "discovery" as an affordable, high quality-of-life destination for in-migration by a number of national news outlets.

The state's other 49 counties all have their own stories of economic growth in the last year that vary by place. Many resemble those told above. But recent growth has been tilted toward cities of late – just 10% of state growth occurred in 2021 outside of the state's seven largest counties. That's a big change from 10 years ago when resource extraction industries were riding high. ■

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

Higher Wages and Incomes Swell State Revenues

BY TERRY JOHNSON

As shown in Table 1 for fiscal 2022, total general fund revenue collections were $3.89 billion with 77.6% 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 $862.8 million or 28.5% from collections received in fiscal 2021. This increase was unusually high and was attributed to individual income tax and "other source" collections. The sum of the changes for the remaining sources was a net increase of $85.2 million, primarily caused by increased corporation, property, and oil and natural gas taxes.

The change in income tax collections can be explained by federal legislation enacted to address the impacts of COVID-19. The federal stimulus payments enacted by Congress resulted in substantial payments to Montanans. The economic statistics maintained by the U.S. Bureau of Economic Analysis provides measures of transfer payments to Montanans as well as wage and salary income of employees. Figure 1 shows the year over year change in transfer payments since 2013. The payments increased by $3 billion in 2020, a 28.4% increase, and by $1.1 billion, or 8.2%, in 2021. Since these monies are considered taxable income under Montana law, income tax collections were increased based on the tax liability of the taxpayer.

The pandemic also had an impact on the workforce available for Montana businesses. Throughout Montana there were numerous posted signs indicating businesses were searching for workers. This workforce demand increased the wage offerings of businesses. Higher wages increased total state wage and salary incomes as shown in Figure 2. Total wage income increased by $2.5 billion, or 10.7%, from 2020 to 2021. Higher wage income also increased state individual income tax collections in fiscal 2022.

State government maintains a Budget Stabilization Reserve Fund (BSRF). This fund is used to provide funding for the general fund account if revenue collections fall below expectations. The BSRF is funded from monies that are above a specified amount at the end of the fiscal year. The BSRF, however, is capped at a certain amount. When this cap is reached, the excess is returned to the state general fund. This occurred in fiscal year 2022 and is shown as "Other Sources" revenue category shown in Table 1. ■

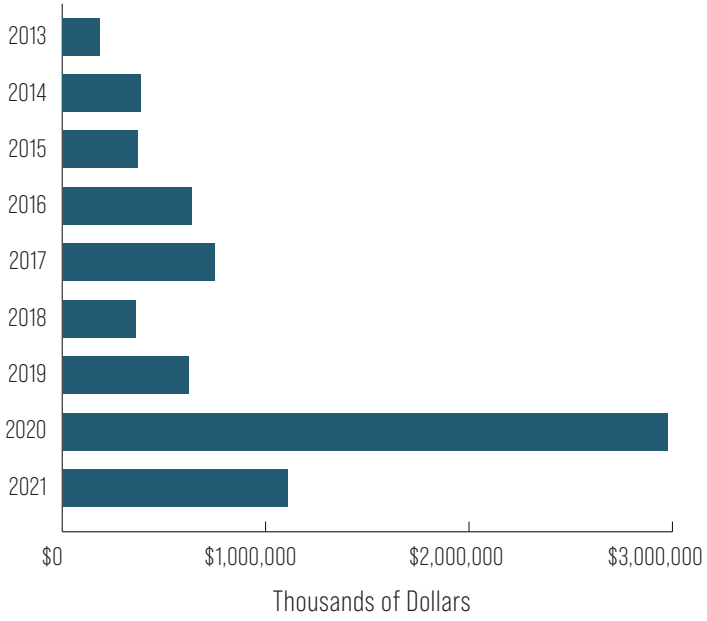
Terry Johnson is the former chief revenue forecaster for the state of Montana, now retired.

TABLE 1 STATE GENERAL FUND REVENUE COLLECTIONS, MILLIONS OF DOLLARS

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	% OF FY 2022 TOTAL	$ CHANGE FY 21 TO 22	% CHANGE FY 21 TO 22
TOP SEVEN SOURCES								
Corporation Tax	$167.1	$186.5	$187.4	$266.5	$293.7	7.5%	$27.2	10.2%
Individual Income Tax	$1,297.8	$1,429.0	$1,435.2	$1,765.4	$2,393.8	61.5%	$628.4	35.6%
Insurance Tax	$75.3	$76.1	$82.5	$87.3	$97.9	2.5%	$10.6	12.2%
Oil and Natural Gas Tax	$54.5	$54.2	$38.4	$39.5	$70.5	1.8%	$31.0	78.3%
Property Tax	$276.4	$289.2	$308.6	$310.7	$335.1	8.6%	$24.4	7.9%
Vehicle Fee	$109.5	$109.5	$108.5	$117.8	$121.1	3.1%	$3.3	2.8%
Video Gaming Tax	$60.3	$63.2	$57.4	$74.9	$77.9	2.0%	$3.0	4.0%
BUSINESS SOURCES	$119.5	$124.0	$140.4	$134.5	$94.1	2.4%	-$40.4	-30.0%
CONSUMPTION SOURCES	$83.4	$86.5	$88.4	$92.9	$98.0	2.5%	$5.1	5.5%
INTEREST EARNING SOURCES	$30.5	$41.9	$41.8	$21.1	$28.3	0.7%	$7.3	34.4%
NATURAL RESOURCE SOURCES	$48.5	$50.2	$45.4	$40.6	$54.3	1.4%	$13.7	33.8%
OTHER SOURCES	$140.3	$123.1	$67.0	$77.6	$226.8	5.8%	$149.2	192.2%
TOTAL GENERAL FUND	**$2,463.1**	**$2,633.6**	**$2,601.1**	**$3,028.8**	**$3,891.6**		**$862.8**	**28.5%**

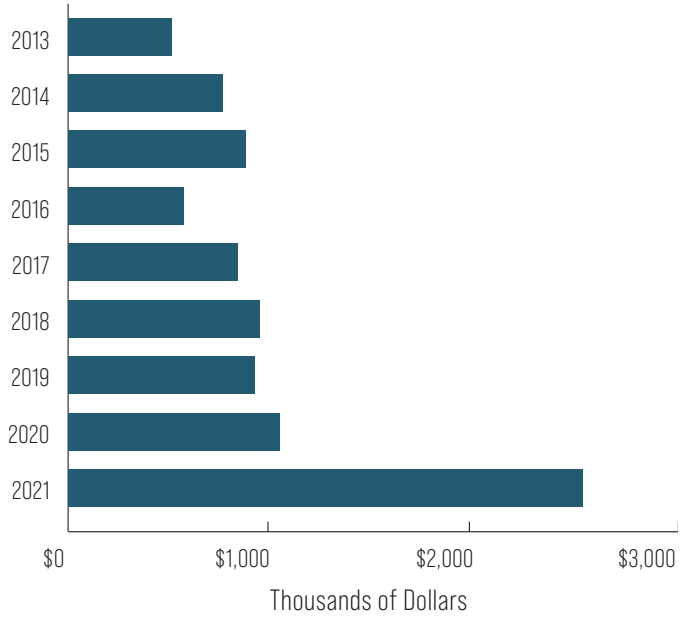
Source: Statewide Accounting, Budgeting, & Human Resource System.

FIGURE 1 YEAR-OVER-YEAR CHANGE IN MONTANA TRANSFER PAYMENTS



Source: U.S. Bureau of Economic Analysis.

FIGURE 2 YEAR-OVER-YEAR CHANGE IN WAGE AND SALARY INCOME



Source: U.S. Bureau of Economic Analysis.

A Volatile and Eventful Year

BY PATRICK M. BARKEY

National elections, European war, 8% inflation. 2022 was not a year that went by quietly, in Montana nor elsewhere. Here are some of the major events that stood out in a year of important developments for the state economy.

Heavy rain and a fast-melting snowpack combined to produce major flooding in the Yellowstone River watershed in June, stranding some visitors in Yellowstone National Park as roads and homes were washed away. The Yellowstone gateway towns of Gardiner, Livingston, and Red Lodge were impacted by road closures that painfully disrupted tourist economies. Flooding on the Stillwater River washed away roads to the Sibanye-Stillwater mine in East Boulder, causing closures and a 2% decline in palladium production.

Photo Courtesy of the National Park Service

Exxon agreed to sell its refinery in Billings to Par Pacific Holdings Inc. for $310 million in October. The sale included the Silvertip pipeline, the company's interest in the Yellowstone Pipeline, and the adjacent Yellowstone Products LP facilities. The refinery is one of four in the state of Montana and has been operated by Exxon since 1949.

Russia's February invasion of Ukraine rattled global wheat markets, sending prices above $12 a bushel before falling back below $10 later in the year. Montana producers faced uncertainty in yields as drought conditions eased in many parts of the state.

Lumber prices fell to earth in the latter half of the year, after a volatile cycle of highs and lows. Between February and November prices fell by more than two-thirds as transportation bottlenecks eased and national housing starts moved downward.

Billings Clinic opened the first building in its new 58-acre campus in Bozeman in October, two years after construction commenced. The 140,000 square feet, three-story multi-specialty clinic is the first of several buildings to be completed as the Billings-based provider expands its footprint in Montana's fastest growing market.

Photo Courtesy of the Paramount Network

Travel restrictions due to COVID-19 continued to relax in 2022, with the Canadian border open to vaccinated travelers in the fall, and with vaccine requirements totally dropped in December.

Montana ended the 2022 fiscal year on June 30 with a record $1.7 billion budget surplus, thanks to surges in income tax collections from households and corporations. The record collections were due to strong economic growth, a then-booming stock market, and taxable income Montanans received from federal stimulus programs.

Venture capital activity in Montana has grown, with now three different funds based in the state focusing on high-tech and biotech startups.

The *Yellowstone* television show, a dramatic series set and filmed in Montana and produced by Paramount, became the highest rated non-sports program, sparking considerable interest in visiting and possibly relocating to the state.

Housing prices grew rapidly in many major markets, with the Federal Home Finance Agency's housing price index showing 52% growth in prices statewide since the beginning of 2020. The affordability crisis caused Governor Gianforte to assemble a task force to formulate recommendations to address the problem. ■

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

Mild Recession to Start Off 2023

BY PATRICK M. BARKEY

The United States economy is set to experience a mild contraction in the first half of 2023 as the consumer-spending engine sputters and business-spending growth goes into reverse.

This is actually a postponement of a recession many had predicted for the end of 2022, owing to the continued strength of hiring that sustained growth in the final quarter of last year. Slower growth will resume in the second half of the year but will be restrained by higher interest rates and reduced capacity for consumer spending.

The weakening global economy has already brought energy prices down, which has helped knock inflation down a peg. Uncertainties over war in Ukraine and the end of zero-Covid policy in China make the global outlook more problematic.

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

The coming recession will be very mild by historical standards. A recovery, initially anemic, begins in 2023 Q3 but gains momentum in 2024 in anticipation of the Federal Reserve Board lowering interest rates as inflation subsides.

The near-term weakness is expected in several sectors, with residential investment leading the way. Under the weight of elevated home prices and mortgage rates, housing affordability has plummeted. This has led to sharp declines in home sales and housing starts.

The price of U.S. farm output, currently more than double its pandemic low, will remain elevated through 2022 consequent to the disruption, through this year's global crop cycle, of agricultural exports from Russia and Ukraine. Farm prices begin to ease in 2023 as global harvests increase.

Slowing global growth will cause the oil prices to ease to $84 (Brent Crude) by the middle of next year, despite cuts in production recently announced by the OPEC+ countries and the E.U. sanctioning of Russian exports.

TABLE 1 A QUICK LOOK AT THE NUMBERS, ANNUAL RATES

	2022 Q2	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2021	2022	2023	2024	2025
REAL GDP (% CHANGE)	-0.6	2.9	0.7	-1.2	-1.0	5.9	1.9	0.3	1.8	2.0
REAL CONSUMER SPENDING (% CHANGE)	2.0	1.7	3.2	0.7	0.3	8.3	2.8	1.3	1.1	1.7
FEDERAL FUNDS RATE (%)	0.77	2.19	3.65	4.52	4.85	0.08	1.68	4.77	4.33	2.97
10-YR. T-NOTE YIELD (%)	2.93	3.11	3.83	3.70	3.62	1.44	2.95	3.59	3.35	3.22
BRENT CRUDE PRICE ($/BARREL)	113.33	100.77	93.23	91.00	83.67	70.70	101.88	87.83	87.42	89.75
CPI (YEAR/YEAR % CHANGE)	8.6	8.3	7.4	6.1	4.0	4.7	8.1	4.0	2.3	2.2
HOUSING STARTS (MILLIONS)	1.647	1.458	1.393	1.258	1.182	1.605	1.554	1.185	1.243	1.365
UNEMPLOYMENT RATE (%)	3.6	3.5	3.7	3.8	4.4	5.4	3.7	4.6	5.0	4.6

Source: IHS Markit.

We expect consumer spending to grow modestly through 2024, constrained by a rebound in the personal savings rate from recent, unsustainable lows below 3%. In contrast, fixed investment is projected to decline 4.1% in 2023, with weakness concentrated in construction, both residential (-16.4%) and nonresidential (+0.1%).

Labor markets remain tight, but the trend in payroll gains is slowing. Furthermore, civilian employment has been essentially flat since March. In our forecast, the unemployment rate, which has been within a 0.1 percentage point of 3.6% since March, is expected to average 3.7% in the fourth quarter and rise to an average of 3.8% in the first quarter of 2023.

The Fed will raise its policy rate by March to the range of 4.75% - 5%, temporarily overshooting the terminal range of 2.5% - 2.75%, and will allow its balance sheet to decline by about one third through 2024.

Inflation will decline in three steps. Already underway are the declines in the prices of energy and agricultural commodities that are allowing headline inflation to fall quickly below core inflation. In a second step that is gaining momentum, easing supply-chain tensions allow decelerations or, in some cases, declines, in the prices of certain core goods; for example, the prices of vehicles, first used and then new. In step three, a recession eventually tempers inflation pressures emanating from labor markets. We project the U.S. Consumer Price Index to rise 8.1% in 2022, 4% the next year, and 2.3% in 2024.

The recent upward revision in the forecast underscores an emerging risk: that a resilient economy remains stronger for longer than previously anticipated, requiring a more aggressive and persistent monetary tightening to contain inflation, and precipitating a recession that is later but more severe. ■

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

THE FUTURE OF MONTANA

What the New Wave of In-Migration Means for the State

BY BRYCE WARD

The pandemic has changed Montana: more people, different people, more expensive housing. In economics jargon, demand for Montana increased. The forces driving this change are likely to persist. As such, Montanans must grapple with our response — particularly, how much to increase supply to meet demand.

The way Montanans act to increase supply affects how increased demand manifests itself in Montana. Montanans' supply choices affect the extent to which more demand will lead to more people or higher prices (and different people). Neither more people nor higher prices are strictly good or bad. Each option comes with different tradeoffs. However, Montana's future looks very different depending on how Montanans resolve these tradeoffs. As such, Montanans must understand these tradeoffs and attempt to agree on how to resolve them.

What Changed?

Before discussing the tradeoffs, it is useful to describe what has already occurred. The increase in demand for Montana is noticeable in three areas: the number of migrants, the composition of migrants, and housing prices.

Net migration to Montana has exploded. Figure 1 shows Montana's net migration rate since 2001. The two years since the pandemic saw, by far, the highest migration rates over this period. The net migration rate in 2020 to 2021 was 3.3 times faster than the pre-pandemic average. More rapid migration means that Montana's population is now 28,000 people (or 2.5%) larger than expected based on past migration trends.

It is not just that more people are migrating to Montana. The types of people moving to Montana also have changed. In particular, Montana saw significant increases in migration among highly educated, high-income, at-home workers.

Figure 2 shows the share of migrant households with income over $200,000 ($2021) compared to the percentage of non-migrant households with income over

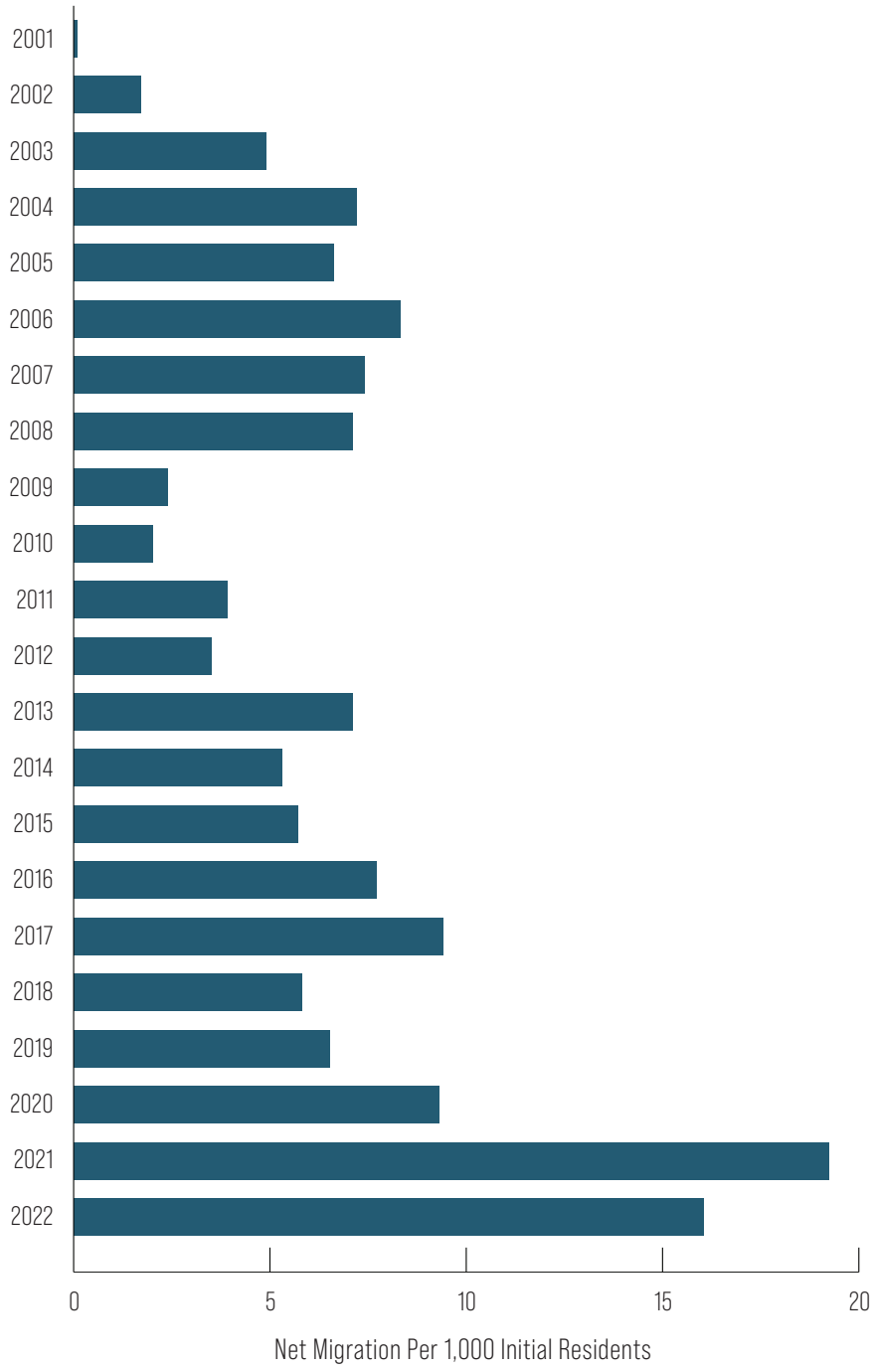
$200,000. During the 2000s, fewer than 4% of migrant households had incomes over $200,000, slightly lower than among non-migrant households. During the 2010s, migrant households were slightly more likely than non-migrant households to have higher income (6.1% vs. 5.9%). Since the pandemic, migrant households have been substantially more likely to have higher incomes. During 2020-2021, 13% of migrants lived in high-income households.

When the share of in-migrants differs from the non-migrant share, migration changes the composition of the total population. As such, these migration trends contributed to a massive change in the share of Montana households earning more than $200,000. Between 2019 and 2021, this share increased by 1.9 percentage points, from 5.3% to 7.2%. This represents a 36% increase, by far the largest change in the country over this period (Utah's 1.1 percentage point or 15% increase ranked second).

Montana also saw significant increases in the share of migrants with college degrees and the share of migrants who work from home. While Montana had already seen migration increases from these groups before the pandemic, both surged during 2020-2021. Forty-five percent

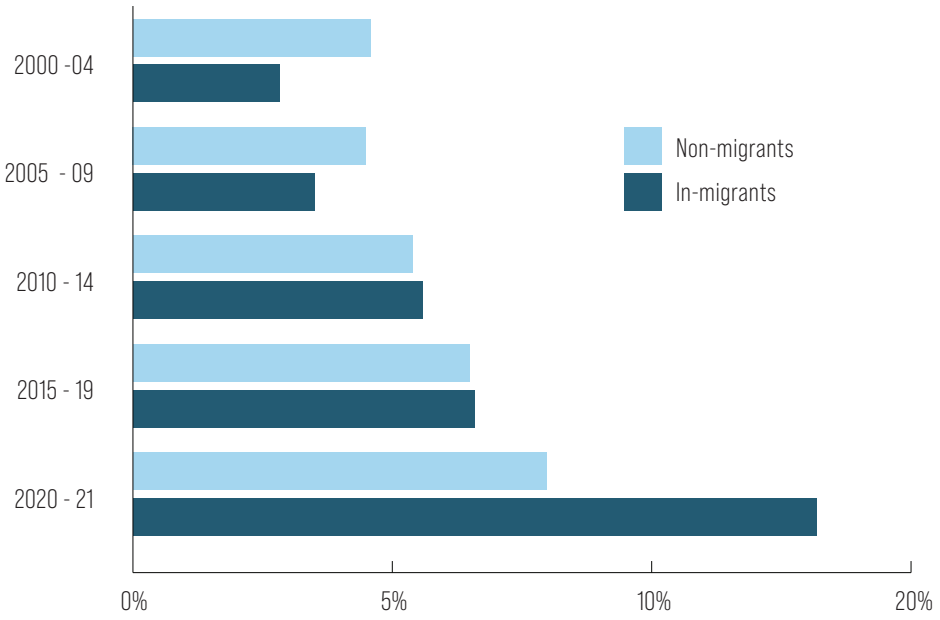
FIGURE 1 MONTANA'S NET MIGRATION RATE, 2001-22

The net migration rate is the number of people who moved into Montana minus the number of people who moved out per 1,000 initial residents.



Source: Census Components of Population Change 2000-2010, 2010-2020, 2020-2022.

FIGURE 2 SHARE OF IN-MIGRANT AND NON-MIGRANT HOUSEHOLDS WITH INCOME >$200K ($2021)



Source: Analysis of 2000-2021 American Community Survey microdata obtained from IPUMS-USA. Incomes adjusted for inflation using CPI-U.

of Montana's new residents (over age 20) had at least a bachelor's degree, a 22% increase over the pre-pandemic level and a 37% higher than the non-migrant share. Twenty-two percent of in-migrant workers (over age 20) reported that they primarily worked from home the week before the survey, more than double the pre-pandemic share and 57% higher than the non-migrant share. In total, during 2020-2021, Montana attracted nearly 30,000 migrant college graduates (10,000 more than had it followed pre-pandemic trends) and nearly 10,000 migrant at-home workers (5,000 more than had it followed pre-pandemic trends).

More people moving into Montana means more demand for housing in Montana. However, the shift in migration also matters. Historically, fewer than 30% of households that migrated to Montana within the last year owned their homes; however, since the pandemic, 45% of new migrant households are homeowners (including 68% of migrant work-from-home households and 82% of high-income households).

More people, plus more people who want to own their homes, contributed to an explosion in home prices. Adjusted for inflation, Montana's home values increased by over 33% between Q3 2019 and Q3 2022. This exceeds Montana's real home price growth over any three-year period since the mid-1970s. It is higher than the booms during 1975-1978 (32% increase), 2004-2007 (27% increase), and 1991-1994 (24% increase).

While various factors may have contributed to the boom in demand for Montana (e.g., pandemic-related shifts in vacation travel, the popular *Yellowstone* television series), the rise in remote work is a key source of the change. Moreover, remote work is the change whose persistence could fundamentally change households' decisions about where to live.

Before the pandemic, fewer than 5% of workdays occurred at home. As such, the 96% of working households with at least one in-person worker needed to live within commuting distance. In this world, job availability constrained demand for Montana.

For many workers, Montana did not have positions in their field, and the jobs available paid substantially less than similar work elsewhere. For instance, the median worker with a bachelor's degree earned only 77% of the national median. As a result, many people who wanted to live in Montana chose to live elsewhere.

Post-pandemic, roughly 30% of workdays occur at home. The share of working households with at least one in-person worker has fallen to 87%. Between 2019 and 2021, the U.S. added 9.1 million households where all workers worked from home and another 5.7 million households where at least one worker worked from home. In total, 22.6 million households, including 65 million Americans, now have at least one at-home worker.

As such, the economic constraints that used to limit the set of people who could choose to live in Montana have weakened. As a result, some Montana workers who might otherwise have left Montana can access higher-wage remote work without leaving the state. Similarly, some workers in other locations will be able to keep their higher-wage, non-Montana jobs and move to Montana. Furthermore, shifts to hybrid work may also make Montana a more desirable place for firms to locate offices.

TABLE 1 SHARE OF IN-MIGRANT AND NON-MIGRANT PEOPLE WITH COLLEGE DEGREES (AGE >24) AND SHARE OF MIGRANT AND NON-MIGRANT WORKERS WHO WORK FROM HOME.

	COLLEGE GRADUATES (OLDER THAN 20)		WORKING FROM HOME (OLDER THAN 20)	
	Non-migrants	In-Migrants	Non-migrants	In-Migrants
2000 - 04	24%	33%	7%	5%
2005 - 09	26%	30%	7%	6%
2010 - 14	28%	32%	6%	7%
2015 - 19	30%	37%	7%	10%
2020 - 21	33%	45%	14%	22%

Source: Analysis of 2000-2021 American Community Survey microdata obtained from IPUMS-USA.

> More people, plus more people who want to own their homes, contributed to **an explosion in home prices.**

While precisely how much remote work will shift demand for Montana over the long term remains unknown (and partly depends on Montanans' choices), the potential shock is enormous. For instance, if Montana captures the same share of remote workers that it had before the pandemic, the shift to remote work could increase Montana's population by an additional 85,000 people, and that is just the increase in remote-working households. Increased demand for Montana by other people will likely accompany growth in the remote-working population.

What Do These Changes Mean?

More demand for Montana is not strictly good or bad; however, more demand means that Montanans will face more of the tradeoffs that accompany greater demand. The precise set of tradeoffs Montanans will face depends, in part, on how much (and how well) Montanans act to increase supply to accommodate the growth in demand.

Broadly, the tradeoffs from more demand can be grouped into two categories: the consequences of size and the consequences of cost. If Montana acts to accommodate the growth in demand by building more houses, more infrastructure, etc., the increase in demand will lead to expansion and the consequences of

If Montana does not build more to **accommodate rising demand**, then rising demand will cause Montana to become more expensive.

Photo Courtesy of Wikimedia and Cole Robertson

size. More people living in Montana can lead to good things, like more economic opportunities and a wider array of goods and services. However, more people can also lead to bad things, like increased congestion. Increased congestion is particularly troublesome for things where it is impossible (or very difficult) to increase supply to meet growing demand (e.g., rivers, lakes, mountain peaks). When supply struggles to meet growing demand, scarcity becomes more salient, and conflict over how to allocate/manage these resources becomes more intense.

If Montana does not build more to accommodate rising demand, then rising demand will cause Montana to become more expensive. Limiting the supply of housing limits population growth. As such, incumbent property owners benefit from increased appreciation, and those who can afford to live in Montana get to enjoy a state with fewer people (and thus fewer pressures on resources where expanding supply is difficult). However, as Montana becomes more expensive, some families can no longer afford to live in Montana, and some firms cannot pay wages high enough to remain viable in Montana. As such, the composition of Montana's population and economy changes, and conflict intensifies about how to manage/allocate Montana's scarce housing.

Neither of these choices is appealing. There are unfortunate costs associated with increasing demand; however, there is no magical solution that yields benefits without costs. Increased conflict over scarce resources is inevitable in the face of rapidly growing demand. Nonetheless, Montanans have the power to shape these conflicts, make choices about which scarce resources will face the greatest pressure and how to allocate them. To chart a course toward the future with the most palatable tradeoffs, Montanans must decide which path to take, including how to mitigate the known costs along the chosen path. Agreeing on a path will be difficult; however, failure to pick a path does not allow Montana to avoid the consequences of size and cost. It likely only ensures that Montana will continue to struggle with both. ■

Bryce Ward is an economist and founder of ABMJ Consulting.

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Understanding Visitor Recreation Experiences on Montana's Public Lands

BY KARA GRAU, MEGAN SCHULTZ, GLENNA BROWN, AND MELISSA WEDDELL

The grandeur of Montana's public lands attracts visitors from all over the world who want to experience the beautiful parks, wilderness, wildlife, and waters. Montana is ranked 10th in the nation in federal land ownership, with about 30% or 27 million acres, followed by state agencies that manage a little over 5 million acres. Moreover, Montana is the gateway to the iconic Glacier and Yellowstone National Parks.

During the COVID-19 pandemic, Montana's public lands saw unprecedented visitation as both residents and nonresidents sought outdoor experiences. In response to the high visitation to Montana public lands, the Institute for Tourism and Recreation Research (ITRR) asked nonresident visitors about their recreation experiences, use of public lands, and trip planning. Public lands were defined as state parks, fishing access sites, national park sites, national Forest Service lands, and Bureau of Land Management areas. Nonresident travelers interviewed by institute surveyors around the state were given this survey along with the Nonresident Travel Survey, after completing an in-person "Front End" survey at a gas station, rest area, or airport. Current and historical nonresident travel data can be viewed by clicking on Interactive Data on ITRR's website. (itrr.umt.edu). Data included here were collected from late May 2021 through June 2022.

> Vistors expected to see beautiful **scenery**, **mountains**, stunning **landscapes**, scenic **views**, and **wide-open spaces**.

During the survey period, 1,327 surveys were collected. Among respondents, the average age was 56 years old, with 45% of the sample being female and 55% male. The average travel group size was 2.2 people, with couples (42%), self (26%), and immediate family (21%) making up the majority of groups. On average, visitors stayed in Montana for 5.7 nights. Vacation (39%) and visiting friends or relatives (27%) brought the majority of these

visitors to the state, while 20% indicated they were primarily passing through Montana. The remaining 14% were in the state for business (9%), shopping (<1%), or other reasons (4%).

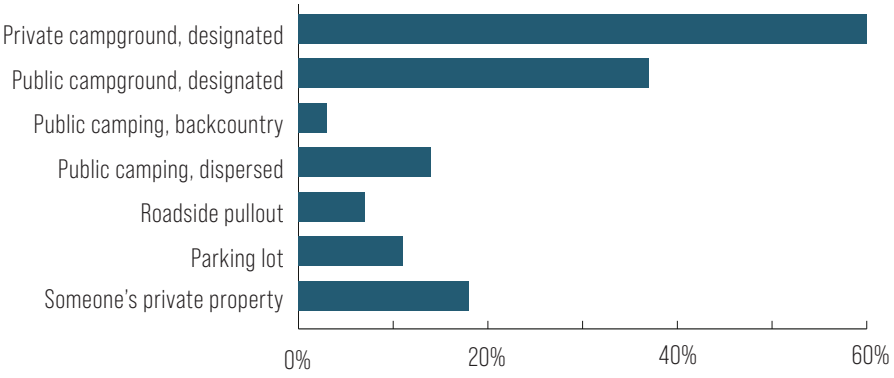
Visitation, Motivations, and Expectations

Most of the survey sample had visited Montana (79%) at least once before their current trip, and over 60% of repeat visitors had previously visited more than five times as adults. More than half of repeat visitors chose to visit new public land areas in Montana. Among the first-time visitors, 70% of them had wanted to visit Montana for a year or more and 11% said it was a lifelong dream. For nearly 60% of respondents, Montana was the main destination for their travels, while 23% reported Montana was one of several destinations, and 15% considered themselves just passing through.

When analyzing over 600 open-ended responses from first-time visitors, the top motivations for their trip were a general desire to travel, to take a road trip, and to have family vacation bonding time. The second-largest category was a desire to see either Glacier or Yellowstone National Park. Respondents expected to see beautiful scenery, mountains, stunning landscapes, scenic views, and wide-open spaces. In addition, they expected outdoor opportunities that included recreation, wildlife sightings, and wilderness experiences, as well as the chance for relaxation and peacefulness. Visitors reported that weather conditions, like smoke and heat, were not what they expected, along with park ticketing, limited cell service, and a lack of taxis. Most respondents commented that Montana exceeded their expectations, referring to the beautiful scenery, vistas, and amazing mountains. Other positive comments included our water irrigation, vibrant shops, and the friendliness of Montanans. ITRR gathered 800 responses from repeat visitors, who stated their reasons for visiting a new location in Montana included the desire to explore, to experience new places, and to have new adventures. Respondents explained that their public land experiences met their expectations

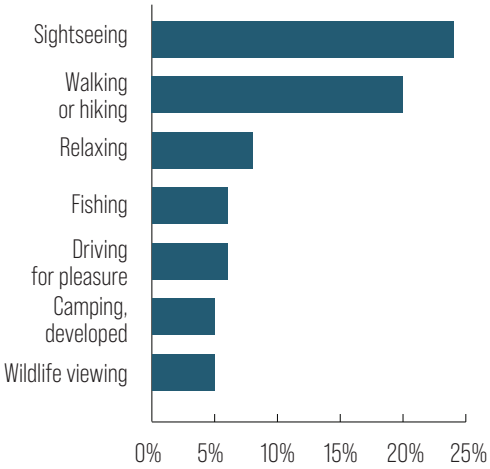
Photos Courtesy of the National Park Service

FIGURE 1 CAMPING LOCATIONS



Source: The Institute for Tourism and Recreation Research.

FIGURE 2 PRIMARY ACTIVITIES ON PUBLIC LANDS



Source: The Institute for Tourism and Recreation Research.

with our beautiful and peaceful scenery; clean, accessible, and well-cared-for public lands; and abundant outdoor recreation opportunities.

Montana Campgrounds

Of the majority of visitors who camped in Montana, 60% stayed in a private campground, 37% on public lands (developed), 18% on private property, and 14% on dispersed public lands (Figure 1). Most who camped did not attempt to use a public lands reservation system to book a campsite (i.e., ReserveAmerica.com, Recreation.gov); however, about 30% did. Of the travelers who camped, 13% had difficulty finding available camping on Montana public lands, 21% successfully used a public lands reservation system to book a campsite, 8% used one but unsuccessfully, and 71% did not use an online reservation system.

Public Land Activities & Uses

During the 12 months before completing the survey, 10% of respondents had visited Montana public lands once, 25% had visited two to five times, and just 8% had visited six or more times. Over half of those who had visited public lands in the past 12 months went somewhere in the state that was new to them during their recent trip. When asked why they visited a new Montana location, respondents stated they wanted to explore new locations (90%), and 43% said they had more time to explore. Twenty-one percent of respondents indicated there were public land activities they wanted to participate in but could not do so for various reasons, including: not having enough time (54%); not owning

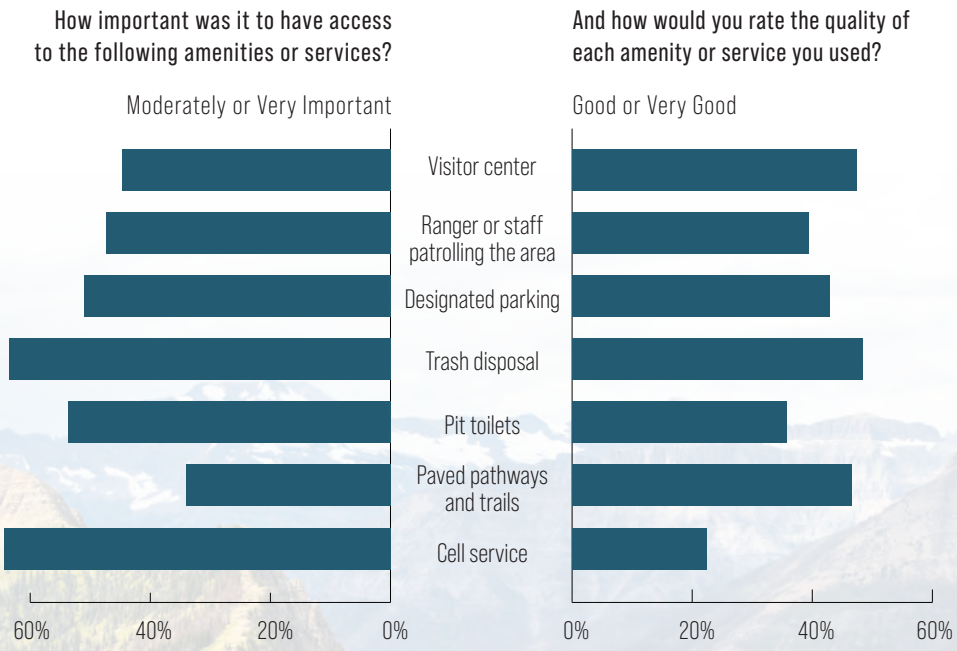
gear (14%); and finding the activity too expensive (11%). While many respondents selected from the reasons provided, 43% reported "other" as a reason, which included responses about wildfire, smoke, and related restrictions; inclement weather; crowding or lack of parking; and difficulty obtaining Glacier National Park tickets. All respondents were asked about their activities and use of public lands in Montana, and the top activities visitors participated in were sightseeing, walking/hiking, relaxing, and fishing (Figure 2).

Public Lands Experience

An overwhelming number of visitors to Montana public lands felt their experience met their expectations (97%), and 82% were very willing to recommend their most recent public lands experience to a friend. With an apparent increase in "new types" of visitors to public lands during the Covid-19 pandemic, land managers were specifically interested in how these individuals were learning about what to do, or not do, while recreating. Respondents were asked how they learned about the rules and regulations for public lands use in Montana. Almost 40% said posted materials at a site were used, and for repeat visitors, they relied on past visits to an area. Twenty percent noted that staff or volunteers on-site helped convey the rules and regulations of an area, and 50% stated that a ranger/staff was important. When visitors were asked for comments about what avenue would be most effective for managers to communicate rules/regulations about public lands, the majority felt that having information in print and/or on-site was most effective. This included signs, brochures, and on-site staff. About one third of respondents felt that online information was best. This included agency websites and social media. This information is important for agencies to show that one out of five visitors learns proper land-use etiquette from someone on-site (Figure 2). Staffing our public lands is of utmost importance during increased use.

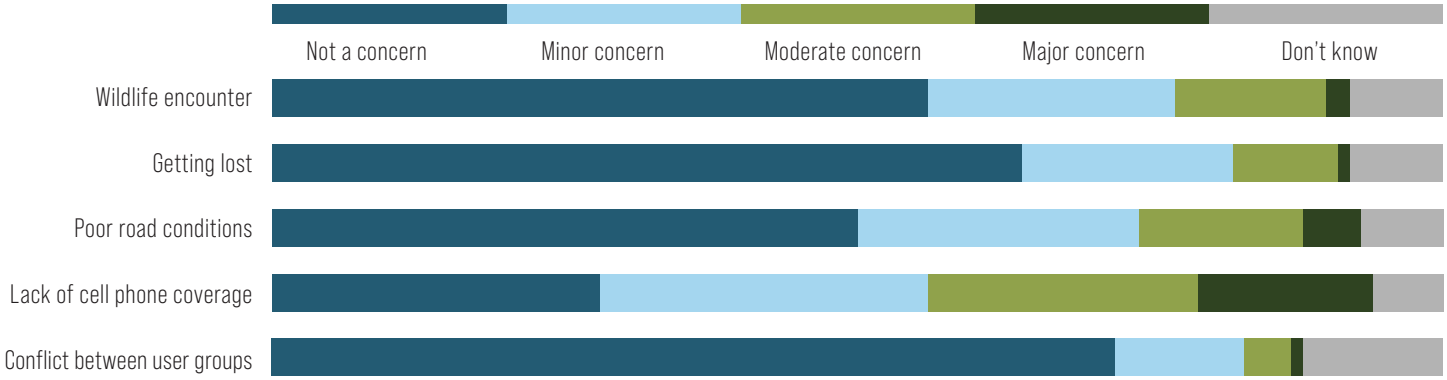
Respondents were asked about the amenities or services they used on Montana public lands as well as safety concerns they had. Almost three-fourths of the respondents reported that cell service was important, but only 25% stated that the quality of service was good or very good. Next to cell service,

FIGURE 3 SELECTED SURVEY RESULTS ABOUT RECENT VISITS TO MONTANA



Source: The Institute for Tourism and Recreation Research.

FIGURE 4 SAFETY CONCERNS WHILE VISITING MONTANA PUBLIC LANDS



Source: The Institute for Tourism and Recreation Research.

pit toilets and parking were also rated as highly important. A few safety concerns some visitors had, along with their level of concern on Montana public lands, are displayed in Figure 3. Again, lack of cell service ranked as the highest level of concern regarding safety, with road conditions and wildlife encounters following.

The Montana Public Land Experience

Public lands and waters are central to the Montanans' quality of life and the main driver of the tourism and outdoor recreation economies. During the Covid-19 pandemic, when indoor restrictions occurred, people recreated outdoors, causing unprecedented public land visitation. Nationally more than half (54%) of Americans ages 6 and over participated in at least one outdoor activity in 2021, and the outdoor recreation participant base grew by 2.2% in 2021 to 164.2 million participants, according to the Outdoor Industry Association. During this time, Montana's outdoor recreation economy grew nearly 30% and saw a 29.5% growth in participants in outdoor recreational activities from 2020-2021, according to the Bureau of Economic Analysis. Furthermore, in 2021 inflation-adjusted ("real") GDP for the outdoor recreation economy increased 18.9%, compared with a 5.9% increase for the overall U.S. economy. Real gross output for the outdoor recreation economy increased by 21.7%, while outdoor recreation compensation increased by 16.2%, and employment increased by 13.1%. Montana had the second-highest state level value added, behind Hawaii, for outdoor recreation as a share of the state GDP with 4.4% and had an 18.1% increase in outdoor recreation employment. These numbers reinforce that public lands and water are central to Montana's thriving tourism and outdoor recreation, and therefore need understanding and protection. ■

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Megan Schultz is a project manager and research associate at ITRR. Her projects focus on nonresident visitation; resident recreation, and travel behaviors as well as attitudes; state parks visitation; and working with communities across Montana.

Glenna Brown is a project assistant and qualitative specialist at ITRR. Her focus is supporting the ongoing nonresident visitation work and assisting with qualitative projects for ITRR and the National Park Service Projects.

Kara Grau is the assistant director of Economic Analysis at the Institute for Tourism and Recreation Research.

Assessing the Impact of the *Yellowstone* Television Series on Montana's Tourism Economy

BY PATRICK M. BARKEY AND MELISSA WEDDELL

Since 2020, the *Yellowstone* television series, produced by Paramount Studios, has been filmed in its entirety in and around the Bitterroot Valley of western Montana.

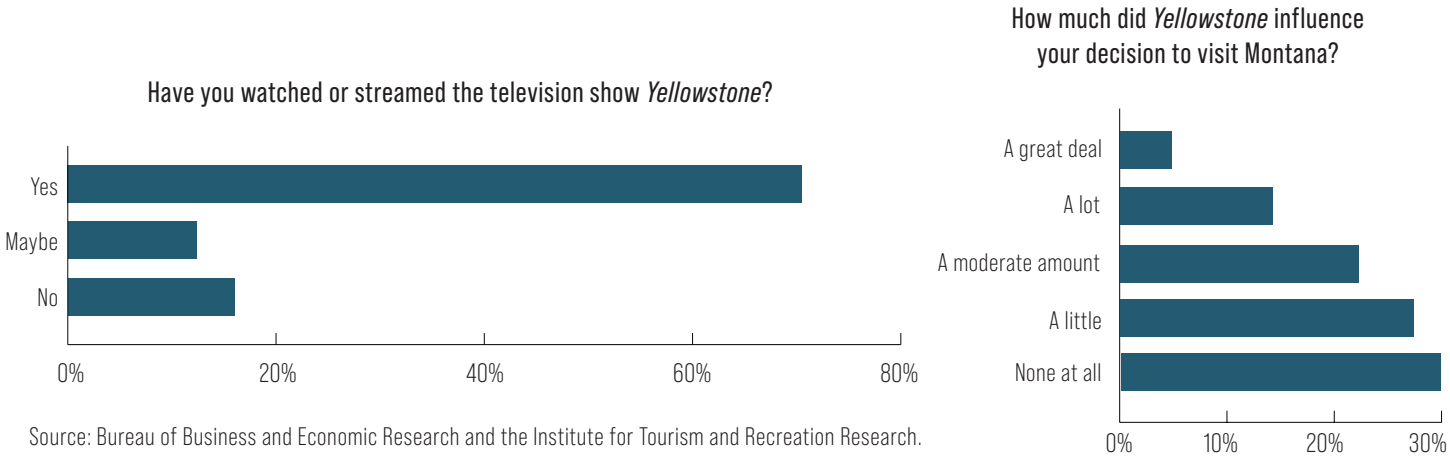
As part of its application for a tax credit based on its film production expenditures, as spelled out in the Montana Economic Development Industry Advancement (MEDIA) Act that became law in July 2019, the studio made available detailed information on its production-related expenditures in the state. The Bureau of Business and Economic Research (BBER) at the University of Montana made use of this and other information to compile an analysis of how those expenditures interacted with the state economy to support jobs, incomes, spending and investment across the economy.

Photo Courtesy of the Paramount Network

The BBER's research report, released in April 2022, found that the approximately $72 million in spending that qualified for tax credits under the MEDIA act, along with the 116 Montana residents employed in production activities, had a significant impact on the overall economy. Specifically, the bureau's April 2022 report found that the production activities over the five-month period between October 2020 and February 2021 related to Season 4 of the show ultimately supported 527 new jobs across a full range of industries; $25.3 million in additional personal income; and $85.3 million in additional gross receipts for Montana business and non-business organizations.

These findings occurred both directly through spending of the studio itself, and spending subsequently induced in the economy,

FIGURE 1 SURVEY RESPONSES FROM MONTANA VISITORS



Source: Bureau of Business and Economic Research and the Institute for Tourism and Recreation Research.

as spending received by vendors, employees, and governments was partially re-spent in the local economy to add to the total impact.

The conclusion of the April 2022 BBER report was that the significant spending associated with the production of the show, and the composition of that spending toward local goods and services, resulted in the production activities supporting many more jobs and much more income than the studio's direct spending accounted for.

Broadening Our Understanding of Impacts

The spending and income-based approach of the BBER's April 2022 study of production activities for *Yellowstone* Season 4 in Montana yielded significant insights on the nature and magnitude of those activities as they relate to the state economy. The analysis also benefited greatly from the detailed expenditure records made available. The study serves as an important example of what is involved with a specific production and how production activities connect with the rest of the state economy.

But as a complete analysis of what the production activity does to affect the economy, the study fell short, as it acknowledged:

> … the advertising value of films that use Montana as a backdrop doubtless would add to the ultimate impact of film production on the state economy, but impacts from those sources are not included in this report.

Film tourism, the niche of tourism where visitors explore locations and destinations made famous from movies and television, seems especially applicable to *Yellowstone*. The title of the show itself is associated with the famously beautiful national park, and the story lines, characters, and backdrop of the show embraces the Mountain West in general, and the landscape of western Montana in particular. The Montana Office of Tourism spends millions in advertising campaigns to make potential visitors aware of our state's attractions. Yet the popularity of *Yellowstone* – the highest rated non-sports television show of 2021-22 – has arguably eclipsed those efforts and raised the image of Montana to a wider audience of potential visitors.

To enhance the original study, BBER teamed up with the Institute for Tourism and Recreation Research (ITRR) to include a survey-based approach to the issue of *Yellowstone*-induced tourism spending. In partnership with the nationally recognized survey research vendor Qualtrics, we assembled a national

panel of respondents who were not residents of Montana and had visited the state within the last three years. Using a survey designed and developed by BBER and ITRR, respondents were asked a number of questions about the purpose, frequency, and duration of their visit(s) to the state. They were also asked questions to measure the degree to which *Yellowstone* was an influence on their decision to visit.

Survey Findings

The survey responses were tallied only for those non-Montana residents who said that they had visited Montana in the last three years. The critical portion of the survey was the response to two questions that asked specifically about exposure to *Yellowstone*. Remarkably, 71.2% of those surveyed said that they had watched the show (Figure 1). Another 12.5% were unsure, leaving only 16.2% who answered no to the question. With viewership of 10 to 12 million for individual episodes for a national audience, this is clearly a sub-population of the country that is much more likely to tune into the show.

A subsequent question asked how the show influenced their decision to visit Montana, with five choices ranging from "not at all" to "a great deal." From Figure 1 we see that 19.3% of visitors responded that *Yellowstone* influenced their visitation decision "a lot" or "a great deal." This is another remarkable result.

This information was combined with spending profiles developed and maintained by ITRR on all visitors to Montana to estimate visitor spending that was induced by the show for the calendar year 2021. Our estimate is that 2.1 million visitors came to Montana because of the television show in that year, spending $730 million in our state.

Findings

When the results of the April 2022 study are extended to include the impact of visitor spending, the impact of the show's production and viewing on the state economy changes dramatically. Using the BBER's policy analysis model, we constructed a "no *Yellowstone*" scenario of the economy in which the filming and production activities for Season 4 in the state did not take place, and the spending of the 2.1 million visitors who said that viewing the show motivated their visits did not occur. Comparing this hypothetical, "no *Yellowstone*" economy to the actual economy gives a measure of how the show adds to the economy.

Adding tourist spending into the analysis has clearly increased our estimates of *Yellowstone*'s

Read the full report:
http://www.bber.umt.edu/pubs/econ/FilmIndustryImpact2022.pdf

Photos Courtesy of the Paramount Network

Photo Courtesy of the Paramount Network

TABLE 1 THE CONTRIBUTION OF *YELLOWSTONE* TO THE MONTANA ECONOMY

TOTAL EMPLOYMENT	10,240 jobs
PERSONAL INCOME	$376,100,000
Disposable Personal Income	$324,700,000
SELECTED STATE REVENUES	$44,500,000
OUTPUT	$1,059,400,000
POPULATION GROWTH	3,305 people

contribution to the economy, as summarized in Table 1. All of the impact estimates include both the production activities reported in the April 2022 study and the *Yellowstone*-induced tourism spending.

We find that *Yellowstone* has ultimately boosted employment by more than 10,000 jobs statewide, compared to the number of jobs that would have existed had the show not been produced or aired. These jobs fall into a wide range of industry and occupational categories.

Unsurprisingly, many of the jobs are in industries that receive the spending of visitors, including the accommodations and food and the arts and entertainment industries. However, the job impacts also are significant in seemingly unrelated industries, such as health care and transportation, reflecting the propagation of spending throughout the economy.

This kind of job impact supports significant gains to households in the form of income. We estimate that *Yellowstone* has boosted income received by households – personal income – by $376.1 million, with $324.7 million of that sum representing after-tax, or disposable, income available for spending. As reported in the table, there are impacts on state government tax revenues as well. We find that the *Yellowstone*-induced activity in the state economy has produced $44.5 million more in taxes collected by the state that are directed, in whole or in part, to the state's general fund. The largest of those, of course, is the state individual income tax, which has seen a $17.3 million increase because of the show.

Conclusion

The surge in interest and attention that Montana has received because of the success of the *Yellowstone* television series has had significant impacts on the state economy. The production activity from filming the series in the state has already been shown to support a sizable number of jobs here. Expanding the analysis to incorporate the show's impact on tourism spending reveals much larger impacts to the state economy. ■

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

Melissa Weddell is director of the Institute for Tourism and Recreation Research at the University of Montana.

Action Needed for Montana's Electricity Adequacy

BY PETER LARSEN, PATRICK M. BARKEY, AND DEREK SHEEHAN

Concern over the adequacy of Montana's electricity infrastructure to continue to deliver reliable, reasonably priced, responsibly generated electricity to power the economy of the state has risen in the wake of troubling developments in other states.

The Texas power outage in 2021 caused 57 deaths and $195 billion in property damage. Preventative power cuts in wildfire season in California are estimated to have cost the economy at least $2 billion.

That is one reason why the Montana Public Service Commission convened a special conference on resource adequacy in December 2022, inviting decision makers from the surrounding region to attend. This article is based on a presentation made by the authors at that conference.

What is the state of Montana's electricity infrastructure today? Montanans have enjoyed lower-priced electricity than states in the surrounding region for more than 10 years. For the state as a whole, prices for residential customers have risen only slightly faster than inflation and have actually fallen in inflation-corrected terms for commercial and industrial customers. On the other hand, Montana customers experience more frequent, though less lengthy, power outages than customers in neighboring states, with our trends going in the wrong direction.

There are many reasons to expect that demands on our infrastructure – both in terms of total energy over the year and in terms of the peak experienced in times of heavy demand – will rise in the coming years. Contributing factors include population gains, economic growth, and trends like the increasing adoption of air conditioning and electric vehicles.

The situation is quite different on the supply side of the equation. Montana is served by 36 different load-serving entities (LSEs) that provide power to customers, many of whom own no generating assets. The largest is NorthWestern Energy, a publicly traded utility, while the smallest is the South Dakota-based Grand Electric Cooperative, serving 13 customers in Montana. We are also embedded in a regional grid that enables Montana LSEs to buy their power from other states and provinces, while also enabling electricity generated here to be sold and transported out of the state.

Those complications aside, there are clear trends to be aware of. Over the last 10 years, Montana's generation of electricity has slowly trended downward, with the closures of Units 1 and 2 at the coal-fired Colstrip generator in 2020 producing the largest, single-year decline. The growth in wind-powered generation has stabilized what is known as the nameplate capacity of Montana's generation portfolio. Nameplate capacity is the amount of power, measured in megawatts, that a generator is capable of delivering when operating at full capacity.

It is easily understood that wind generators do not operate at full capacity all of the time – in fact, no generators of electricity do. What is not always appreciated is that the performance of wind at times of heavy system load has been poor. During the hours corresponding to last the 10 years of system peaks, our research finds that Montana wind generators delivered 10% of their nameplate capacity on average, compared to 74% for coal and 54% for hydroelectric generators.

91% of the proposed capacity plans of IPPs in Montana have been withdrawn.

But it is not enough that electricity is generated, it must be transported over high voltage lines to its destination as well. And here we find another troubling aspect of our electricity infrastructure – our transmission lines are among the most congested in the western region of the country.

A 2018 study by the Western Electricity Coordinating Council found that some of the transmission corridors that serve our state were used beyond 75% of their rated capacity as much as 32% of the time, compared to the western average of just 6%.

Meeting the Future Challenge

What are the plans to meet the growing electricity needs of Montanans and others in the region in the years ahead? In at least one sense, they are ambitious. Based on the interconnect requests filed with the Federal Energy Regulatory Commission (FERC), significant amounts of capacity are proposed in Montana and in the adjacent region for the next four years. Those plans include large amounts of wind and solar by independent power producers (IPPs) planning to sell their power to LSEs, often with battery storage. But the latter two technologies remain unproven at utility scale. And in the previous 10 years, 91% of the proposed capacity plans of IPPs in Montana have been withdrawn.

Another challenge is the scheduled retirement of more than 7,000 megawatts of coal-fired generation in the northwest region of the country out to the year 2040. For perspective, the peak power demand for the entire state of Montana is approximately 2,500 megawatts. These represent the retirement dates the plants' owners have put in place – political pressure to retire coal-fired plants earlier than scheduled remains intense.

The situation for investment plans in new transmission capacity is even more disheartening. Less than

Photo Courtesy of TWG Photography

100 miles of new transmission is on the drawing board in Montana in the coming years. Only one state in our region – Idaho – has new transmission under construction.

New Risks on the Horizon

Planning for the future always involves risk and uncertainties, and in our region, there are several new kinds of risks to consider:

- **California's experience with wildfires has exposed two kinds of risks** for their electricity grid. The consequences of poorly maintained high voltage transmission lines cause wildfires as they transit high fire-risk terrain, and the risk of fires – no matter how started – curtail needed transmission capacity to serve customers' needs.

- **A related risk is the impact of drought conditions** on the output of our region's hydroelectric-generation capacity. An overlay of the current drought conditions map with the locations of the more than 100 hydro generators in the northwest makes out exposure to this risk clear.

- **The risk of cyber or physical attacks** on substations or other key infrastructure, most recently demonstrated with the attack on a substation in North Carolina, is emerging as an important concern for future planning.

- **A risk that is particularly important for LSEs who must purchase power** from the regional market is the volatility in markets that can send spot prices up dramatically. And with a huge state like California now purchasing 31% of their power needs from other states, as they did in 2021, Montana can expect to pay more dearly to fulfil its needs from this source in the coming years.

Photos Courtesy of the USDA

- **Finally, there is always a risk of catastrophic failure of a system in another state.** Montana is not an island, and the collapse of a grid elsewhere can have painful implications for us, for both price and reliability.

What's at Stake

Prudent power planning has always called for some amount of excess capacity to serve as a reserve in the case of unanticipated circumstances that stretch resources thin. The electricity we use is perhaps one of the most uniform products in the entire economy, coming to our homes and businesses at a precise voltage and frequency. When a gas station runs out of gasoline, cars go away without gas. But when an electric grid comes up short, the result can be widespread and catastrophic. The destruction in Texas took months to repair and resolve.

But the damage to electric equipment pales in comparison to the damage to the economy. Although Montana customers lose electricity an average of 300 minutes per year, even those outages cost customers more than $400 million. Those costs are almost entirely borne by small commercial and industrial customers who are forced to close, throw out perishables, or face other disruptions. Less noticed are the business opportunities that do not happen in a resource-constrained state because of the lack of available electricity.

Damage to electric equipment pales in comparison to the **damage to the economy.**

What is needed to address electricity resource adequacy? We can begin with a greater awareness of the thin ice we are increasingly navigating. More investment is needed, which in a regulated environment, pushes up electric rates. Since the power system is a highly capitalized, tightly integrated system, projects aimed at addressing needs take years to be designed and built. And so the need to get started, to address the shortfalls fast approaching, is now. ■

Peter Larsen is a research fellow, Derek Sheehan is an economist, and Patrick M. Barkey is director of the Bureau of Business and Economic Research at the University of Montana.

More Agricultural Price and Production Uncertainty and Volatility in 2022

BY GEORGE HAYNES, KATE FULLER, AND JOEL SCHUMACHER

In 2022, Montana farmers and ranchers experienced great uncertainty and volatile agricultural markets as in recent years.

The Russian-Ukraine conflict resulted in high commodity and food prices and high production costs. In addition, relatively dry weather conditions resulted in lower-than-average crop production. Grain prices surged in the spring but retreated slightly in the fall (Figure 1). Cattle prices remained stable early in the year and made slight gains in the fall. Following severe drought conditions in 2021, producers entered 2022 with relatively dry weather conditions persisting, especially in Northern Montana.

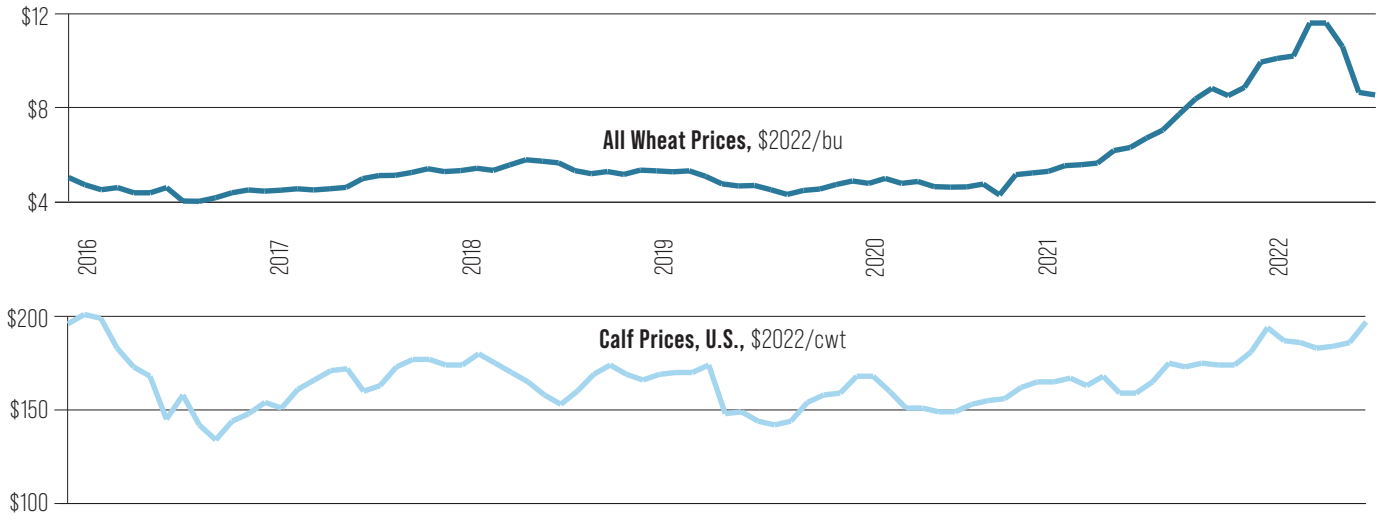
Photo Courtesy of the USDA

Crop Production and Prices

Total production of winter wheat increased by 11% over 2021 as farmers increased acreage and realized higher average yields. Total production of spring wheat increased by 65% over 2021 as average yields increased even though planted acres declined slightly. Total production of barley increased by 45% over 2021 as planted acreage was the highest since 2003 and average yields increased.

Similarly, alfalfa hay production increased by 6% from last year because of more acres harvested; however, other grass hay production fell by 3% because of the lowest average yields since 1988. While crop production was significantly higher than the previous year, which was marked by a severe drought, crop production was significantly below average production over the past 20 years for all crops.

FIGURE 1 WHEAT AND CALF PRICES IN MONTANA, 2016 - 2022



Source: National Agricultural Statistics Service, Quick Stats Database.

Modest increases in the prices received for winter wheat, barley, and dry peas helped to offset the impacts on farm revenues of lower production levels in 2022. From January through September 2022, winter wheat prices increased by 14%, barley prices increased by nearly 20%, and dry pea prices increased by 11%. Other crops, including spring wheat, hay, chickpeas, and lentils realized stable prices or price declines in 2022.

Livestock Production

With severe drought conditions in 2021, the Montana cattle inventory shrunk by 10 percent to the lowest number of cattle since 1962.

In a typical year, about one-third of the pasture utilized by cattle operations is rated as poor. In 2022, 50% of all pastures were rated as poor. However, ranchers had stable calf prices throughout most of the year with slight gains in the fall.

Montana cow-calf producers are linked to export markets. Nationally through August of 2022, U.S. beef exports increased by 6% from last year. Nearly two-thirds of U.S. beef exports were purchased by three countries (Japan, South Korea, and China) in 2022. Beef exports to China increased by 30% while exports to Mexico declined by 15% in 2022.

Farm Financial Conditions

Nationally, farm income statements and balance sheets are healthy. U.S. net farm income is expected to increase by 5% from 2021. The average U.S. farm balance sheet has remained strong with a debt-to-equity ratio below 15%. As noted in previous years, the most important challenge facing producers is liquidity. The average U.S. farm current ratio (current assets/current liabilities) has increased from 1.75 in 2019 to 2.16 in 2022. These ratios suggest that U.S. agriculture is facing minor short-term liquidity challenges, but not long-term solvency challenges. ■

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Easing Demand Meets Fixed Supply and High Prices

BY SAMUEL SCOTT, STEVEN HAYES, AND TODD MORGAN

After several years of record-high home construction and forest products prices, producers in 2022 started to feel pinched between rising costs and cooling demand. At the same time, labor woes across the sector continued as employers struggled to find new workers and workers struggled to find housing.

On the supply side of the forest products market, in-state production decreased in all sectors in 2022. Lumber production dropped nearly 18% to 350 million board feet (MMBF), while plywood production saw a decrease of 6%. The decreases are in line with a long-term trend of decreased lumber production in the state, regardless of increasing demand in the home construction industry (Figure 1). A fire at the R-Y Timber sawmill in Livingston, along with two mill closures over the past couple of years, accounted for a significant portion of the stunted lumber production (as well as a 7% decrease in sector employment).

Photo Courtesy of the USDA NRCS

Timber harvest in the state decreased from 340 MMBF Scribner in 2021 to an estimated 325 MMBF in 2022 – a change of 4%. Part of the decline was an 8% decrease (160 down to 146 MMBF) in timber harvested from national forest lands within the state. The agency fell short of its target by 35%, compared to a 30% shortfall in 2021.

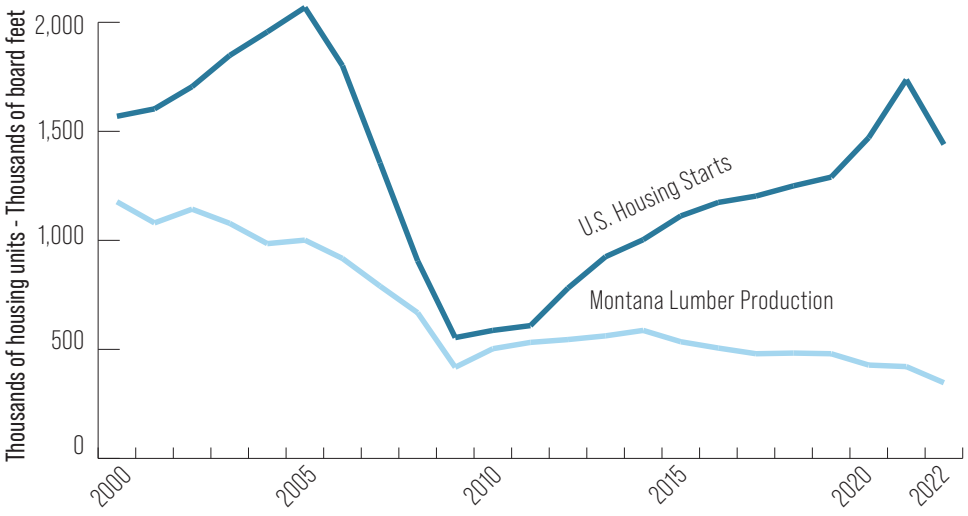
As in 2021, log prices paid by Montana sawmills this past year remained steady, even as national lumber prices continued on their tumultuous track (Figure 2). However, producers felt the inflationary squeeze throughout the year, as the record gap between log and lumber prices diminished.

The industry's labor market remained tight in 2022. A worker shortage in mill towns across the state meant mills were unable to capitalize on high prices by adding shifts and increasing production. Logging companies remained hard-pressed to find equipment operators, especially as wages increased in competing industries. In addition, high housing costs and limited rental availability in mill and logging towns alike made it difficult for employers to entice new workers into the area.

On the demand side, mortgage rates more than doubled to nearly 7% throughout the year – the highest rates seen in over a decade. Those high mortgage rates, coupled with record-high home prices, appear to be showing that the home construction boom of 2020 and 2021 is on its way out.

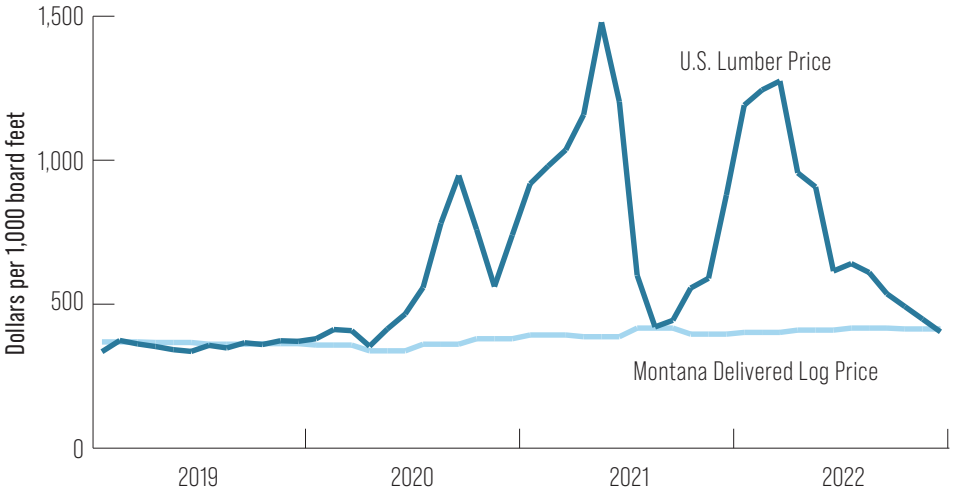
Although the exact appropriations are still pending, the Inflation Reduction Act of 2022 is expected to bring funds into the Montana forest products industry. Two highlights are that a wood innovation grant program is allocating $100 million to support the removal and processing of hazardous fuels and the Environmental Protection Agency will be providing $250 million to businesses and agencies manufacturing building materials with reduced carbon impacts (such as wood products).

FIGURE 1 U.S. HOUSING STARTS AND MONTANA LUMBER PRODUCTION



Sources: Census Bureau, BBER.

FIGURE 2 MONTANA LOG AND U.S. LUMBER PRICES



Sources: BBER, Random Lengths.

Moving into 2023, expect continued cooling in wood products demand. At the same time, flattening inflation may provide relief to producers. Consumer prices should continue to settle, both in price and volatility, although recent years have shown that we should expect the unexpected. ■

Samuel Scott is a forest economist, Steven Hayes is a research forester, and Todd Morgan is the director of the Forest Industry Research Program in Bureau of Business and Economic Research at the University of Montana.

The Global Commodity with Local Implications

BY PATRICK M. BARKEY

If Americans and Montanans needed a reminder of the global nature of energy markets, 2022 gave them one. The Russian invasion of Ukraine in February was more than 5,400 miles away, but its impact was felt at every gas pump in the state. Yet these dramatic events were only part of the global forces that shaped energy markets here and elsewhere.

As a state that produces twice as many BTUs of energy than we consume, developments in technology, markets, and public policy that affect energy prices have historically cut both ways for Montana communities, particularly those that benefit from energy investments and production. But energy events that saw diesel prices spike well above $5 a gallon had few silver linings for Montana producers in 2022, with Bakken oil field development nudging up only slightly.

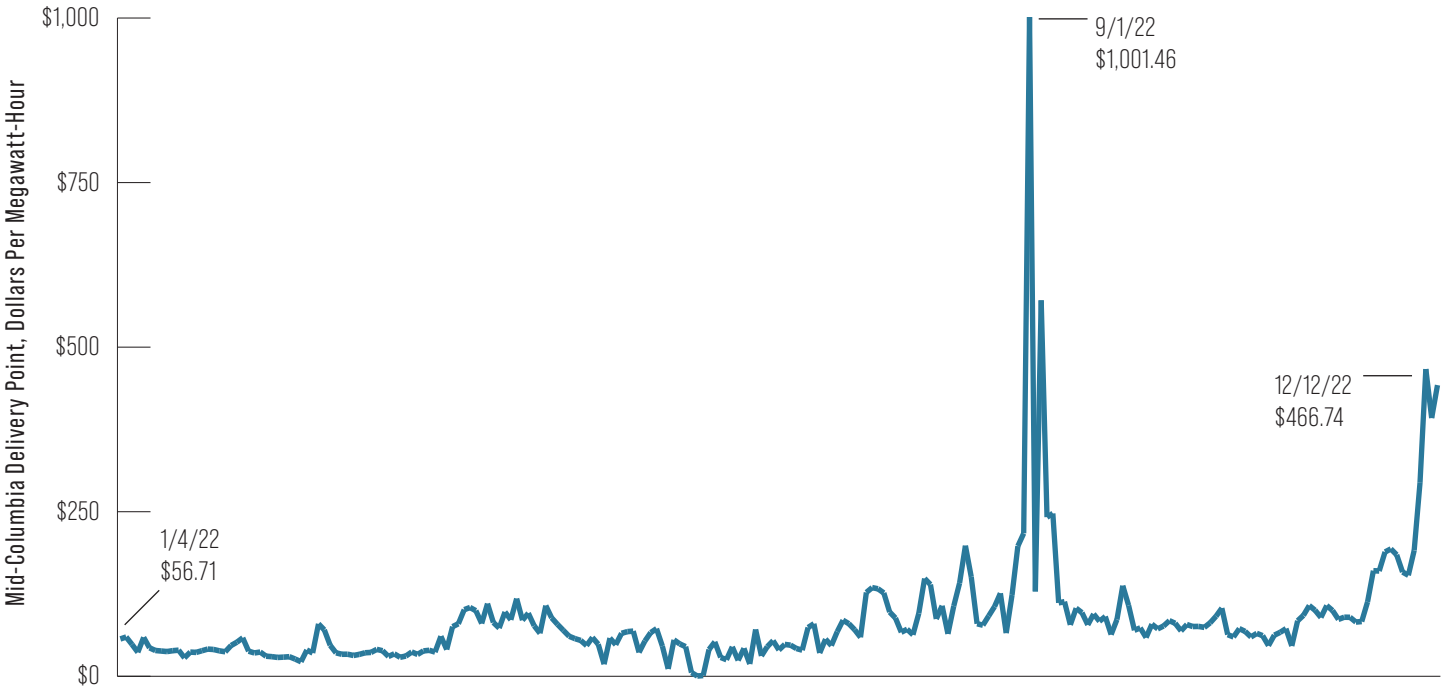
Developments and trends important for Montana's energy economy include:

Petroleum

The huge price spike in refined petroleum products hurt Montana consumers but produced very little activity in the oil-producing parts of the region. Baker Hughes rig count data in December 2022 show just four rigs in Montana and 38 in North Dakota, only slightly up from the 0 and 27 rigs active in those two states, respectively, in December of 2021. The headlong rush into new drilling and production of 10 years ago is nowhere in sight, owing partially to the reluctance of investors to finance the high costs of production in places with higher transportation costs.

It was a good year for Montana's refiners, however, with higher margins for much of 2022. Major changes occurred in two of the state's four oil refineries, with Exxon's sale of its Billings refinery

FIGURE 1 WEIGHTED AVERAGE WHOLESALE PRICE OF ELECTRICITY AT DAILY PEAK, 2022



Source: U.S. Energy Information Administration.

and the conversion of much of Calumet's refinery in Great Falls to bio-diesel production.

Natural gas

The transition of natural gas into a global commodity is about to be greatly accelerated with the expedited construction of new liquefied natural gas (LNG) capacity in Europe in the wake of the Russian gas cutoff related to the war. The U.S. already exports about 10% of its production in the form of LNG, and the figure is trending up sharply. For Montana the changes are two-sided, bringing the potential for more price exposure to global events, but also more incentive to exploit production opportunities.

Coal

Montana's mild rebound in coal production was on track to extend to its second straight year through the first nine months of 2022. While down significantly from decade-ago production levels, coal's stability reflects the fact that 15 states continued to produce more electricity from coal than any other source.

Electricity

Montana's status as a net electricity exporter remains largely intact, although the days when the state as a whole consumes more electric energy than it produces are becoming more common. And 59% of all customers in the state are served by a utility (NorthWestern Energy) that relies on market purchases of electricity, with consequent exposure to price volatility in regional markets. Those prices rose for much of the year (Figure 1).

Uncertainty remains over the future of the state's largest electric generator, the two remaining units of the Colstrip generator. The West Coast owners of the facility are squeezed by the laws passed in Oregon and Washington mandating elimination of coal-fired power generation from their portfolios by 2030 and 2025, respectively. ■

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

A Rapid Post-Pandemic Recovery

BY ROBERT SONORA

Montana manufacturing continues to do well in the aftermath of the COVID pandemic, with growth for nondurable and durable goods outpacing pre-pandemic trends. Employment was in decline during the pandemic, but this trend has reversed since the third quarter of 2020. Montana manufacturing has recovered more quickly than the rest of the nation because the composition of the industry differs from other states.

The two largest manufacturing sectors in Montana – petroleum and coal, and wood product manufacturing – are not among the seven largest sectors nationally.

Over the past decade, the U.S. manufacturing industry has undergone significant changes in the way technology is used. These structural changes only accelerated during the pandemic, and it's no different for Montana's producers. Labor shortages and technological developments have led to greater use of new hardware and software in manufacturing plants.

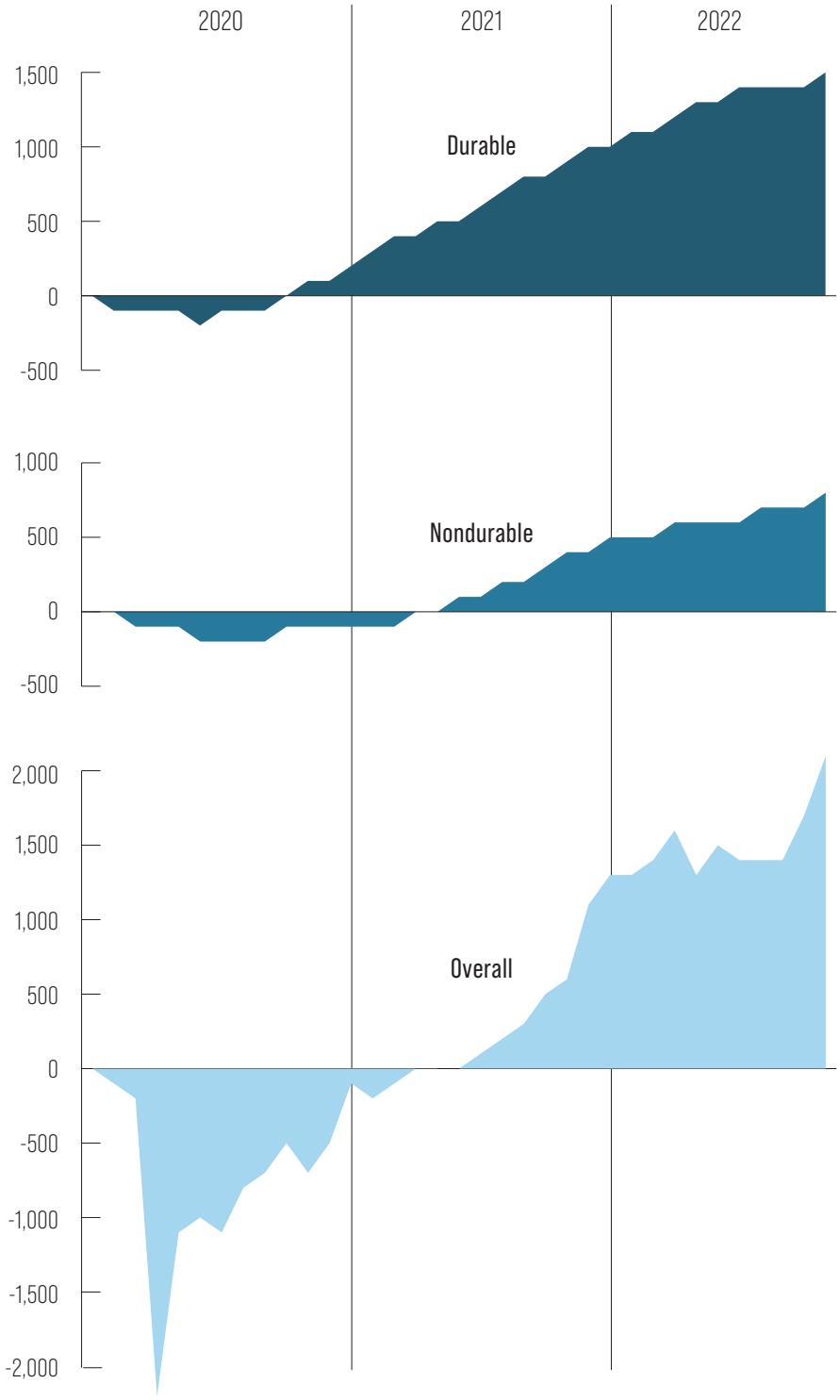
What is referred to as "Industry 4.0" has led to the adoption of new technologies in manufacturing. These innovations include: Local 5G network, the "industrial internet of things," greater use of robotics, and additive manufacturing, to name a few.

Manufacturers in Montana remain relatively optimistic compared to the national averages, and for good reason: Montana's manufacturing sector has generally outperformed the nation's manufacturers in the aftermath of the pandemic-induced recession. As such, manufacturing continues to be a stable economic sector. In 2021 manufacturing employment as a share of total nonfarm employment

grew 4.4% to 21,400 workers. Similarly, manufacturing's labor earnings as a share of Montana private industry grew 11.9% to $1.6 billion, which is about 6.4% of total state earnings. This translates to an average annual pay of $57,000 in 2021. In 2021, manufacturing's share of total state output, gross state product, climbed 13.1% to $3.8 billion, or about 7.8% of Montana output.

In the aftermath of the 2020 COVID-19 recession, Montana manufacturing bounced back relatively quickly from the deep economic drop in the first quarter of 2020. Figure 1 shows the difference in overall, durable, and nondurable employment from January 2020. As the figure shows, the decline in durable manufacturing employment was much shallower than for nondurable employment, quicky returning to pre-COVID levels before the end of the year. Nondurable employment required an additional year, but both sectors have surpassed their pre-COVID trend. Employment in this sector returned to pre-pandemic levels in early 2021. More impressive has been the return of durable manufacturing. Prior to the pandemic, durable manufacturing employment had

FIGURE 1 CHANGE IN MANUFACTURING EMPLOYMENT



Source: U.S. Bureau of Labor Statistics.

Chemicals, machinery, and transportation equipment are Montana's three largest global export sectors.

Photo Courtesy of the BLM

been trending downwards, but the post-COVID growth in this sector has reversed this trend.

Montana manufacturers are active in global markets as well. The three largest export sectors for Montana in 2021 were: chemicals, machinery, and transportation equipment. Food, beverages, and tobacco fell out of second place during the pandemic. By far the largest export market is Canada, accounting for almost 30% of Montana's manufactured exports. In 2021, the remaining large export markets were: China (2), South Korea (3), Mexico (4), and Belgium (5).

This year's annual Montana manufacturing survey provides insight into how producers assess their plants' economic performance in 2021 and their outlook for 2022. While the Montana economy and manufacturers face the same challenges as the rest of the country, there is one characteristic that differentiates the state's firms from much of the rest of the country – manufacturing in Montana is predominantly performed by small businesses. The U.S. Census Bureau reports that 51% of Montana manufacturers have five or less employees and no firms have 300 or more workers.

There are several results from BBER's 2021 manufacturing survey that are worth highlighting: Over one-half of manufacturing firms saw an increase in total sales and profits from 2020, and 95% of firms did not reduce production capacity. However, almost one-half of Montana's manufacturing firms experienced a significant worker shortage, and over 60% of all firms had supply chain issues in 2021 and/or experienced issues with the cost of intermediate goods.

Overall, 2021 and 2022 provided considerable challenges for all sectors of the U.S. and Montana economies. Manufacturing was able to "buck the trend" and has had a strong couple of years, despite being hamstringed by supply chain issues and a tight labor market. Most economists forecast that 2022 would see the end of many of these supply side issues; however, global geo-politics and COVID policy in China could continue to hamper all facets of the economy over the foreseeable future. ■

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

Tourism Trending Toward Market Correction

BY MELISSA WEDDELL AND KARA GRAU

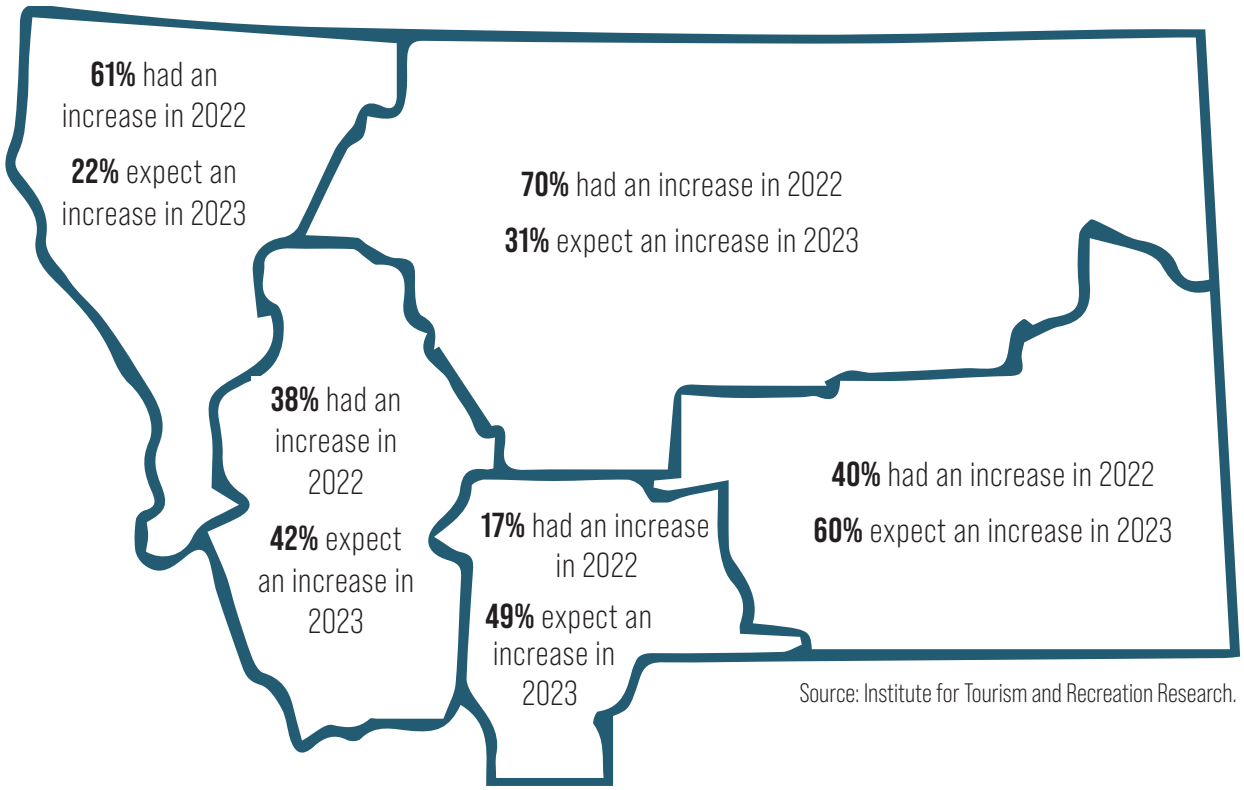
At the onset of 2022, Montana's tourism industry expected another record year, but increased travel costs and the devastating Yellowstone flood slowed visitation.

After a 12% jump in 2021 to 12,522,000 visitors, preliminary 2022 estimates show a slight decrease. Visitation has been fairly consistent for the past six years, with a little over 12 million visitors annually, except for a slight dip in 2020. Looking back, the tourism industry could not maintain the pandemic-driven visitor surge and is trending toward a market correction.

Montana's tourism industry is driven by its natural amenities, including public land, parks, mountains, lakes, and rivers, but the volume of visitors in the past few years has been unsustainable in many areas. Glacier National Park, over the past decade, has experienced a 64% increase in visitation, which has caused overcrowding, traffic jams, and safety concerns, resulting in a vehicle reservation system. This system will result in more consistent visitation numbers during the summer months. Visitation for June-September was down only

Photo Courtesy of the National Park Service

FIGURE 1 PERCENT OF TOURISM BUSINESSES THAT EXPECT AN INCREASE IN UPCOMING YEAR



Source: Institute for Tourism and Recreation Research.

FIGURE 2 IN-MIGRATION AND TOURISM ECONOMIC DEVELOPMENT VIEWS

Source: Institute for Tourism and Recreation Research.

4%, with peak visitation of 734,892 in July. Yellowstone National Park's preliminary numbers, however, show volume in 2022 was down approximately 30%, a significant drop after seven years of over 4 million visitors, aside from a dip in 2020 due to the pandemic. This drop was largely due to park closures from the historic flooding of the Yellowstone River that damaged infrastructure and washed away roads. As a result, the number of visits to Yellowstone in June to September was down 40% compared to 2021. The flood will have impacts for years to come, especially for businesses in gateway communities rebuilding their livelihoods. Visitation to Montana's state parks also surged in 2021, creating pressure on staff and resources, with early visitation estimates for 2022 showing a decrease that may also indicate a market correction of visitation in the state.

In a survey by the Institute for Tourism and Recreation Research of more than 300 tourism-related businesses, 40% of respondents indicated their revenue increased in 2022 compared to 2021, and 15% stayed the same. Of the business owners who responded to the survey (n=111), the majority reported that their visitation/customer volume either increased (31%) or stayed the same (26%), and 43% reported a decrease. Not surprisingly, business owners in Yellowstone Country and Southeast Montana reported the most decreased visitation/customers of any region, 63%, and 55%, respectively (Figure 1). In the same survey, the institute asked about in-migration, with 38% of respondents stating that new residents in Montana were good for the state, though 63% stated that the increase in new residents did not increase the workforce. This is not surprising since 52% reported a shortage of workers in 2022. Open-ended responses indicated that the positive outcome of new residents included economic advantages, diversity of new ideas, and opportunities for community improvement. At the same time, the downfalls included housing availability and cost, higher taxes, crowding, workforce availability, and damages to natural resources (Figure 2).

The flooding of the Yellowstone River will have **impacts for years to come.**

Looking ahead to 2023, 76% of business owners stated they anticipate visitor/customer volume to increase (42%) or stay the same (34%). This reflects a trend toward market correction, although it varies by travel region. The 2023 outlook for travel, tourism, and recreation is cautiously optimistic, bearing in mind fears of a slowing economy and increased inflation. ■

Melissa Weddell is director of the Institute for Tourism and Recreation Research at the University of Montana.

Kara Grau is assistant director of Economic Analysis at the Institute for Tourism and Recreation Research.

Declining COVID Cases Reduce Stress on Hospital Systems

BY ROBERT SONORA

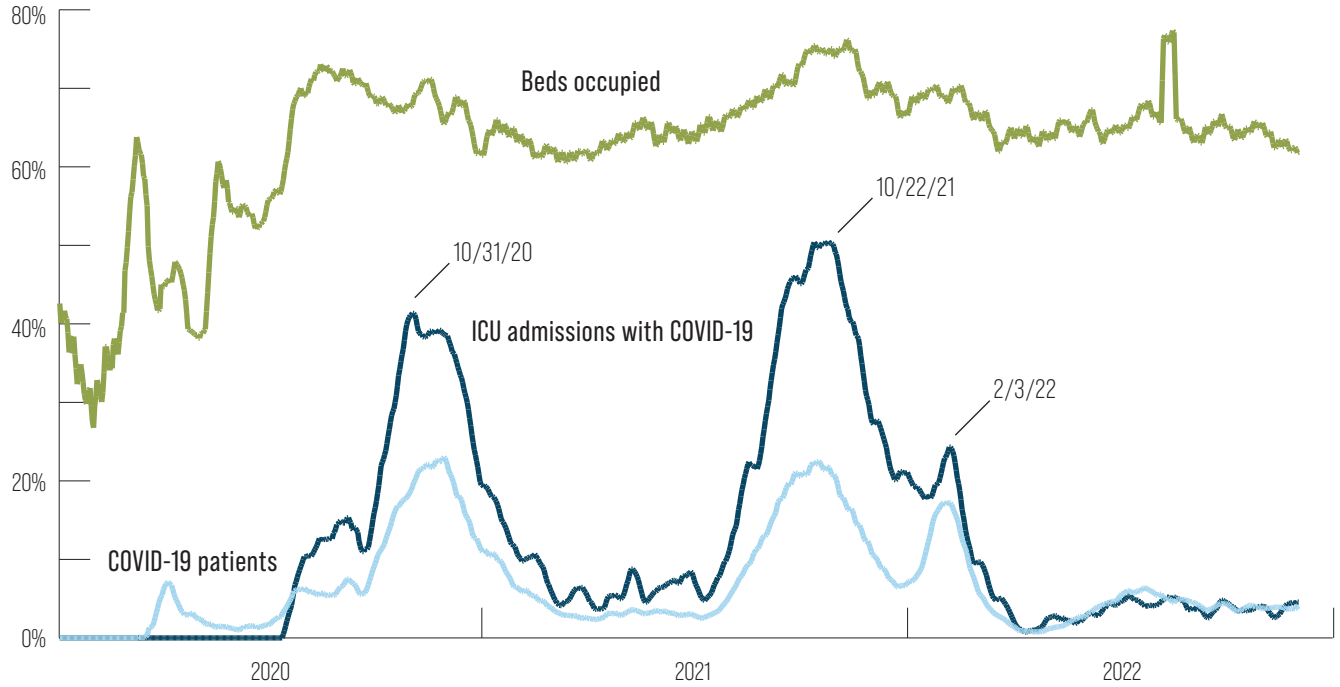
After two years dominated by COVID-19, this year has been a welcome change as most people have returned to a modified normal life. Though the pandemic has not been officially declared over, it does signify a structural shift in the way economies and the health care sector think about individual and public health policy.

The immediate effect of the decline in COVID-19 is the reduced stress on the state's hospital system. Figure 1 shows three hospital utilization rates for Montana from 2020 to 2022. The impacts of COVID-19 on hospitals can be seen in the percent of COVID-19 patients and percent of ICUs occupied by COVID-19 patients. We see two spikes, one each for the Delta and Omicron variants, but with roughly 95% of all Americans having some form of immunity, this has fallen to less than 10% since the spring of 2022. We also see that ICU rates are highly correlated with COVID-19. Despite the declines in COVID-19 patients, bed utilization remains elevated, climbing from 40% occupancy to about 65% since the summer of 2020. And because many health policy experts believe this year could be the worst year for the flu in decades, combined with RSV, bed utilization rates are likely to remain high through the spring of next year.

COVID-19 has had several impacts on the overall health care sector as well as on the economy as a whole. Key changes to the sector are primarily found in the development and adoption of new technology. First, restrictions on mobility and in-person visits during COVID-19 have reshaped the delivery of health care – particularly in mental health services. One estimate forecasts that between 2020 and 2025 telehealth will grow by almost 40%. For a rural state such as Montana, growth in this area will contribute to improved health in remote areas.

Secondly, the health care industry will continue to adopt technology, particularly in information, to provide quality care. Artificial intelligence and data analytics are proving helpful in predicting ailments and disease transmission, which will help the health care sector to better

FIGURE 1 HOSPITAL UTILIZATION



Source: Centers for Disease Control and Prevention.

understand risk as well as forecast and track other viruses, such as the flu.

Employee burnout in the health care system in the aftermath of COVID-19 is well documented. Employment in health care nationally and in Montana has grown faster than all other sectors, as can be seen in Figure 2, which shows cumulative employment growth since 2000 along with its respective pre-COVID-19 trends. Nationally, employment has grown faster than in Montana, but as the figure shows, neither has returned to the pre-COVID-19 trend.

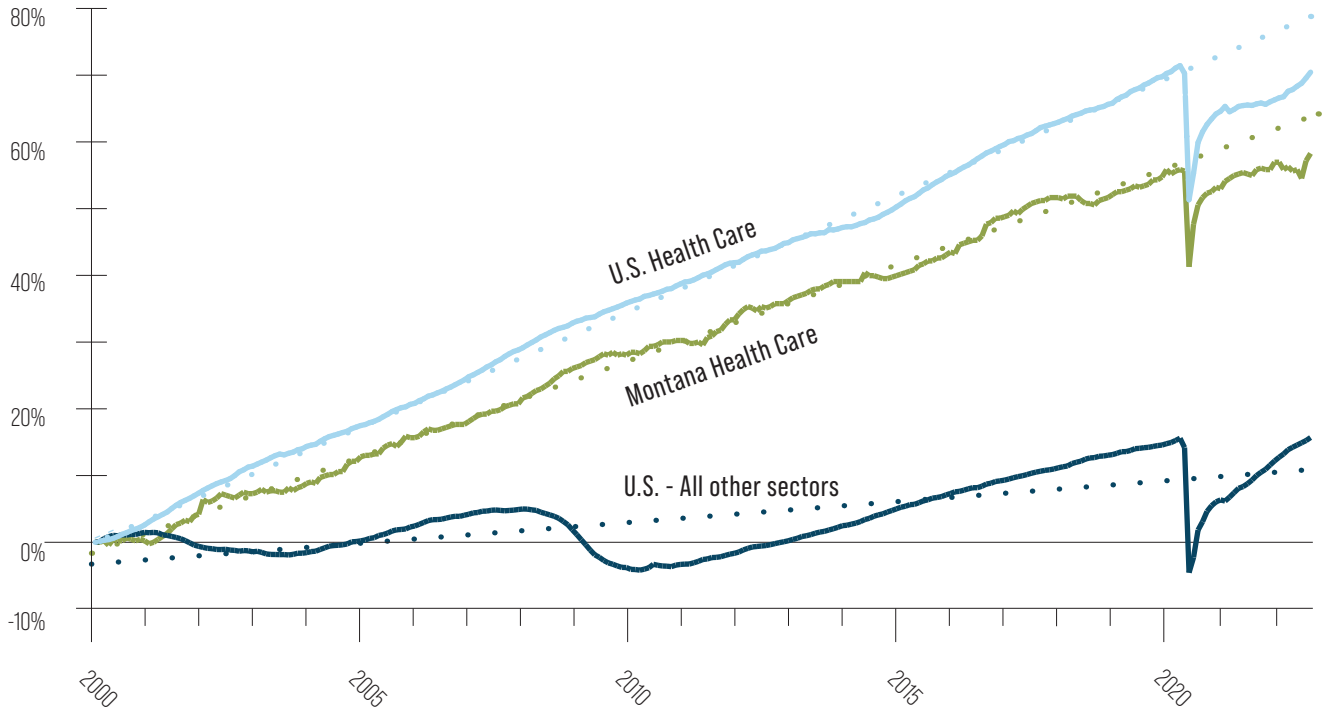
This trend is partly due to demographics, as practitioners tend to be older and are retiring. It is also partly attributed to provider rural hospital closures. According to a recent government report, 12 (accounting for 23% of rural hospitals) are at risk of closing, and three are at risk of immediate closure. It is important to note that some of the slack in care will be ameliorated by technology, but it is forecast that there will continue to be shortages in the state. Demand for nurses and home health occupations is likely to increase, while the supply of high-demand occupations, like nurse practitioners, will continue to be constrained.

Currently hospitals in Montana are still reporting staff shortages. Figure 3 shows the number of health centers reporting the need for more workers. Hospitals were hardest hit during the Alpha wave of COVID and less so during the Omicron wave, though this was likely due to an increase in the number of traveling nurses as well as the governor's call to the national guard to assist providers. Despite improvement, we do see a relatively constant number of centers reporting shortages concurrent with bed occupancy rates shown in Figure 1.

This last observation is particularly important for eastern Montana. Most of the health care growth will likely be concentrated in western Montana, where population growth is happening. Montana is forecast to have a surplus of nurses and physician assistants through 2025, but there will be a shortage of home health aides.

Long COVID-19 also will continue to be a drag on individuals' quality of life and the economy in

FIGURE 2 CUMULATIVE EMPLOYMENT GROWTH, JANUARY 2000 TO JULY 2022

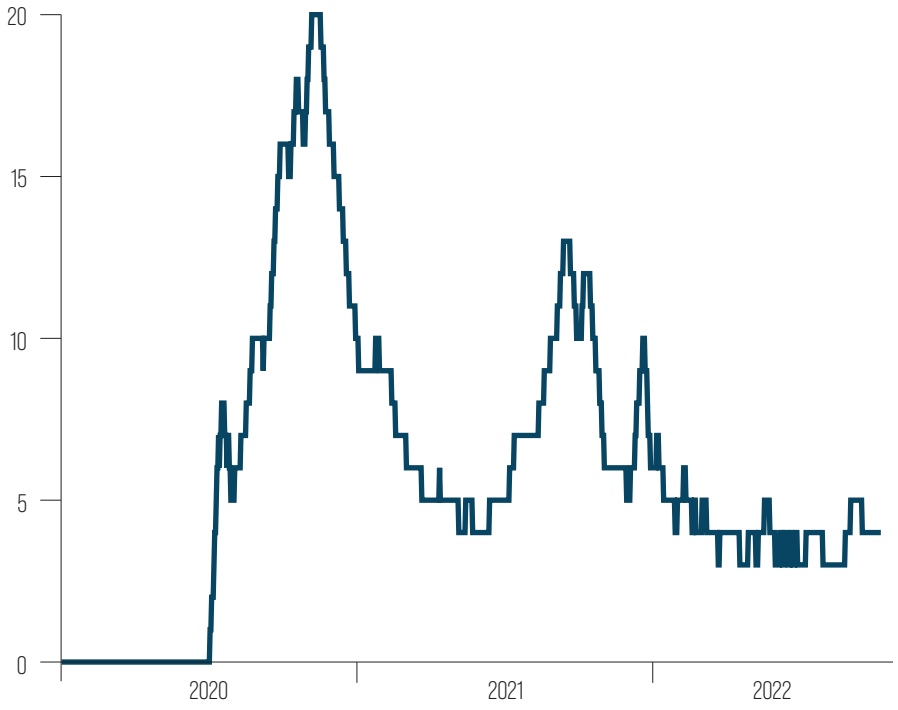


Source: Bureau of Labor Statistics.

the years ahead. It is estimated that between 25% – 40% of all patients will experience at least one ongoing symptom in the months after contracting the disease. The economic cost of long COVID-19 is estimated to be $3.7 trillion, roughly 15% of 2021 nominal GDP. Lost quality of life is the largest cost, about $2.2 trillion, and medical costs and lost earnings contribute another $1.5 trillion, according to a study by David Cutler, a Harvard economist. ■

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

FIGURE 3 DAILY NUMBER OF HOSPITALS REPORTING STAFF SHORTAGES, JANUARY 2020 THROUGH NOVEMBER 2022



Source: Centers for Disease Control and Prevention.

Cooling Markets but Continuing Housing Shortage

BY DEREK SHEEHAN

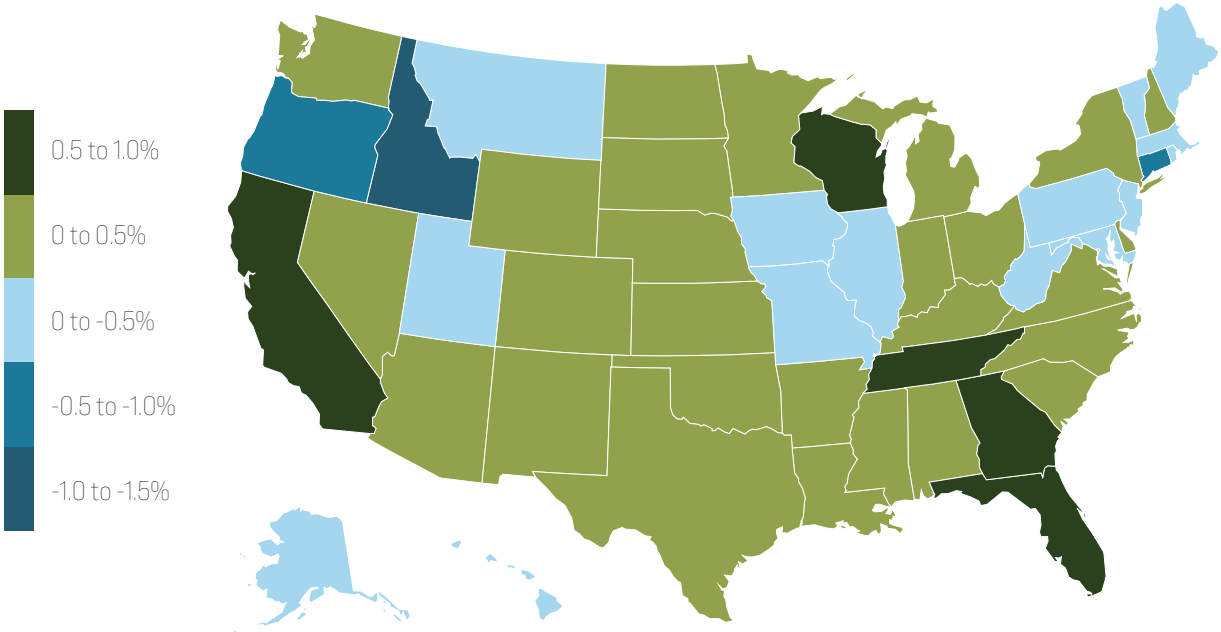
The red-hot real estate market over the past few years in Montana showed signs of cooling in 2022. Nationally, mortgage rates climbed for most of the year, hitting the highest level in 20 years, cooling down demand for homeownership nationwide.

Cooling housing demand appears in state-level migration rates. California and New York, the largest out-migration states in 2021, saw fewer people leave in 2022. Montana was one of a few booming states that did not continue to see net migration rise, falling from 21,083 migrants to 17,804.

Active home listings in the Mountain West trended upward after reaching their lowest levels at the end of 2021. Figure 2 shows the cooling markets of Idaho and Utah have already begun to return to pre-2019 levels. Montana's active listings lag behind these states but also trend toward more supply. For example, in November, Montana's active listings per 100,000 housing units were 69, up from 41 in 2021.A less optimistic look at the housing supply in Montana shows up in the ratio of population to housing units. Construction from 2000 to 2010 was able to decrease this ratio statewide. However, since then, Montana has seen more people competing for increasingly fewer units.

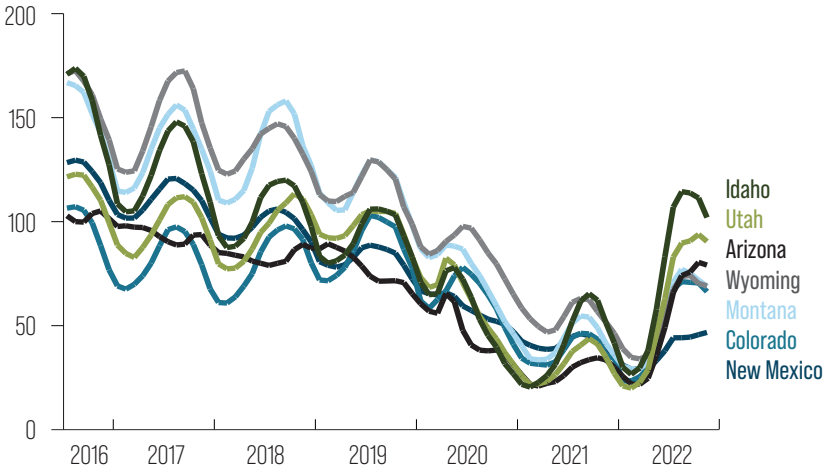
The past three years have drawn attention to the extent of Montana's housing shortage over the last decade, and it will take a while to catch up. Montana's construction industry now builds at levels it did in 2007, but as Figure 3 reveals, this has not been able to keep pace with population growth.

FIGURE 1 CHANGE IN NET MIGRATION FROM 2021 TO 2022



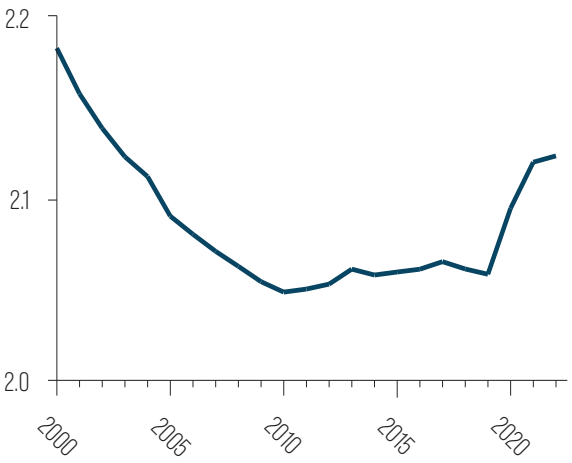
Sources: Bureau of Business and Economic Research and U.S. Census Bureau.

FIGURE 2 ACTIVE LISTINGS PER 100,000 HOUSING UNITS



Sources: Bureau of Business and Economic Research; Realtor.com; U.S. Census Bureau.

FIGURE 3 POPULATION PER HOUSING UNIT, MONTANA



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

The affordability crisis following Montana's tightening markets has both builders and policymakers responding. For the second year, multi-family building permits have exceeded that of single-family homes.

And to further encourage rapid construction, Governor Gianforte has assembled a Montana Housing Task Force to provide specific policy recommendations for decreasing barriers to construction and incentivizing residential investment. ■

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

Montana's Tech Industry Sees New Highs for Funding, New Solutions for Workforce

BY CHRISTINA HENDERSON

Montana's tech industry continues its multi-year trend of fast growth despite the headwinds of housing and workforce shortages. Tech businesses across the state achieved new milestones for venture capital raised in 2022.

Missoula digital outdoor navigation company onX secured a record $87.4 million in Series B funding in October.

Bozeman's Bridger Photonics, a developer of sensors to reduce methane emissions for the oil and gas industry, raised $55 million in early September.

Submittable, a Missoula software company allowing organizations to launch, manage, and measure social impact programs, raised $47 million in Series C funding in June.

2022 also saw commitments to new capital investments in Montana by major tech firms.

Technology consulting firm Cognizant ATG expanded its footprint in Montana with the grand opening of a new Customer Success Campus in Missoula's Old Sawmill District in November, a roughly $40 million project. With more than 300 Montana employees, Cognizant ATG contributed more than $122 million to the Montana economy in 2021, according to a study conducted by the Bureau of Business and Economic Research.

Tonix Pharmaceuticals signed an agreement with the City of Hamilton in October to build a vaccine manufacturing center. The project will bring more bioscience jobs to the Bitterroot Valley, home to Rocky Mountain Labs, a premier National Institutes of Health research facility, and a GlaxoSmithKline Pharmaceuticals manufacturing facility.

In May, Hyundai Motor Group announced an investment of $20 million over the next five years to operate its latest research and

Governor Greg Gianforte speaks to students in The Last Mile technology skills training program at Montana State Prison in October 2022.

Photo Courtesy of the State of Montana

Montana technology companies continue to cite **access to skilled talent** as one of their biggest barriers to growth.

development facility at Montana State University's Innovation Campus. Hyundai New Horizons Studio will design and build ultimate mobility vehicles with robotics and wheeled locomotion technology and create an estimated 50+ jobs in Bozeman.

Montana technology companies continue to cite access to skilled talent as one of their biggest barriers to growth. Significant inroads have been made, however, in developing programs for Montanans to gain the skills needed to access high-paying tech jobs.

In 2019, Cognizant ATG built its successful Aim Higher training program in partnership with Accelerate MT, a collective of organizations that support career and economic development across Montana. The 12-week paid training program teaches Salesforce and business consulting skills to people who have little to no technology background.

Aim Higher is now delivered virtually, expanding participation to rural and tribal communities. To date over 150 students have completed the program and been hired by Cognizant at a salary double the median wage in Missoula. Some employees work remotely, from small towns like Elmo, Havre, and Libby.

In August, Accelerate MT announced the creation of the Tech Careers Rapid Training Hub, a one-stop access point for short-term training that leads to tech industry credentials and careers in roles like IT Administrator, Broadband Technician, Software Developer, Cyber Security, and Salesforce Administrator.

In October, Governor Greg Gianforte celebrated the launch of another new workforce development program, The Last Mile, at Montana State Prison, to reduce recidivism by providing business technology training to incarcerated individuals and connecting them with employment opportunities.

Innovative solutions like these will create new talent pipelines needed to keep Montana's tech industry growing. ■

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

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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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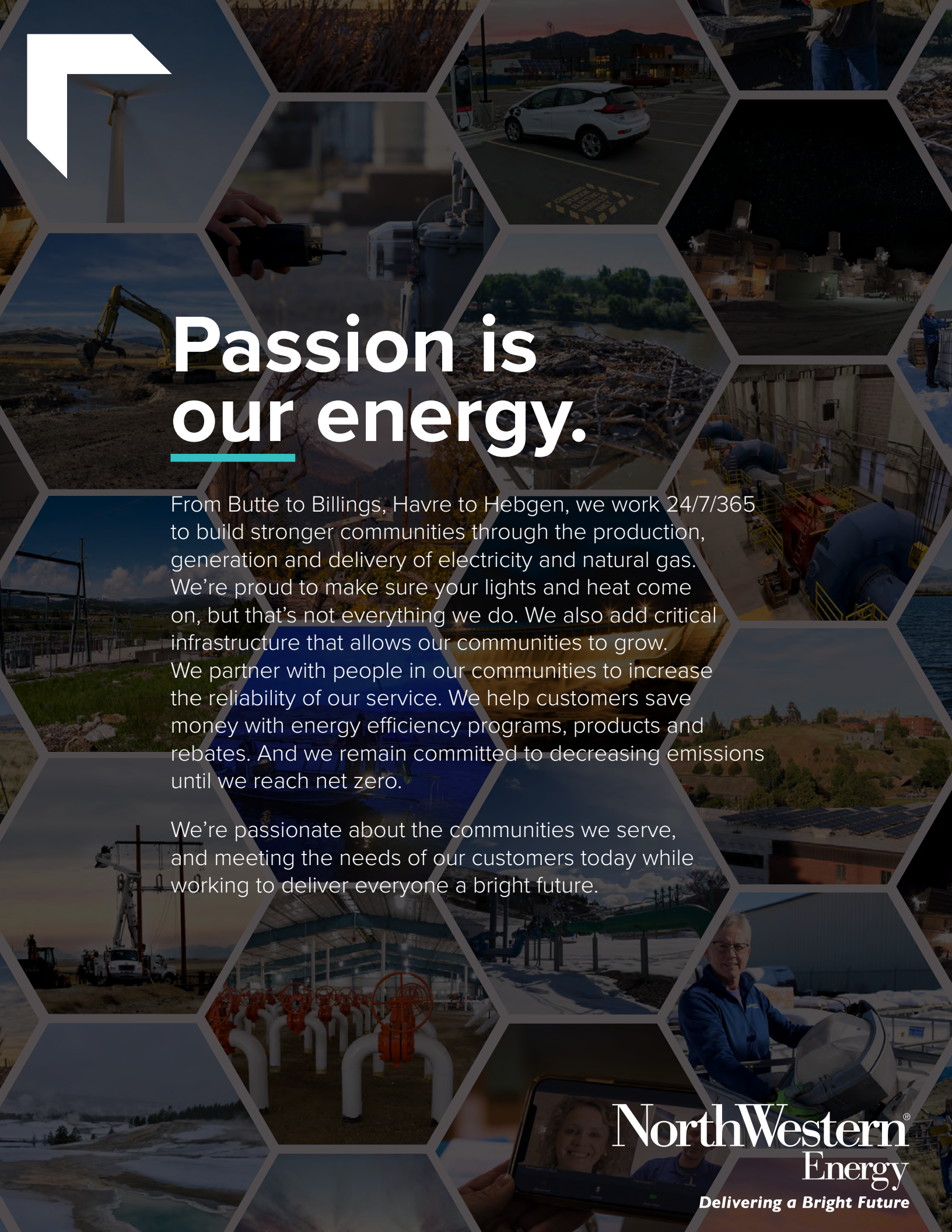

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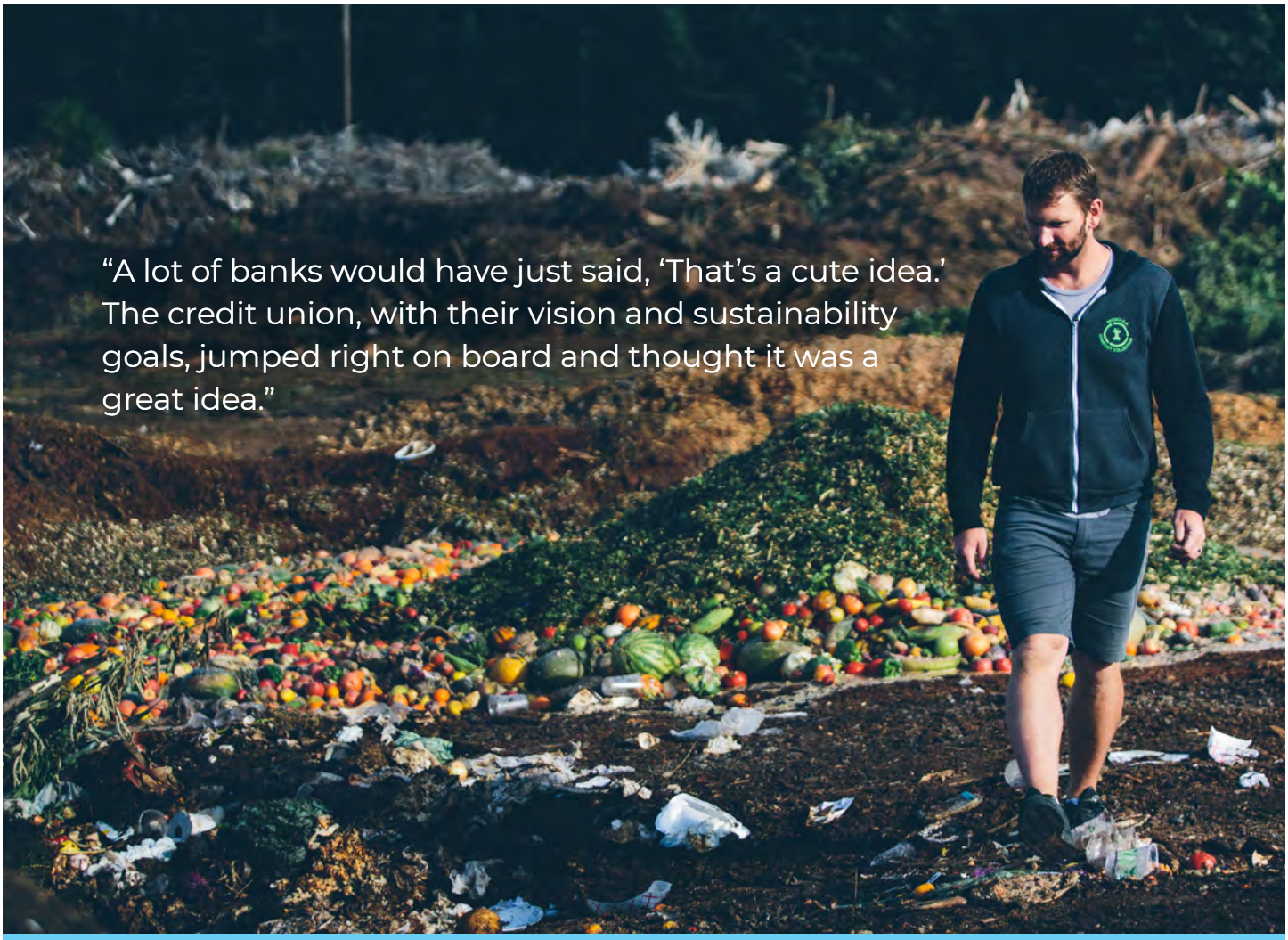

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