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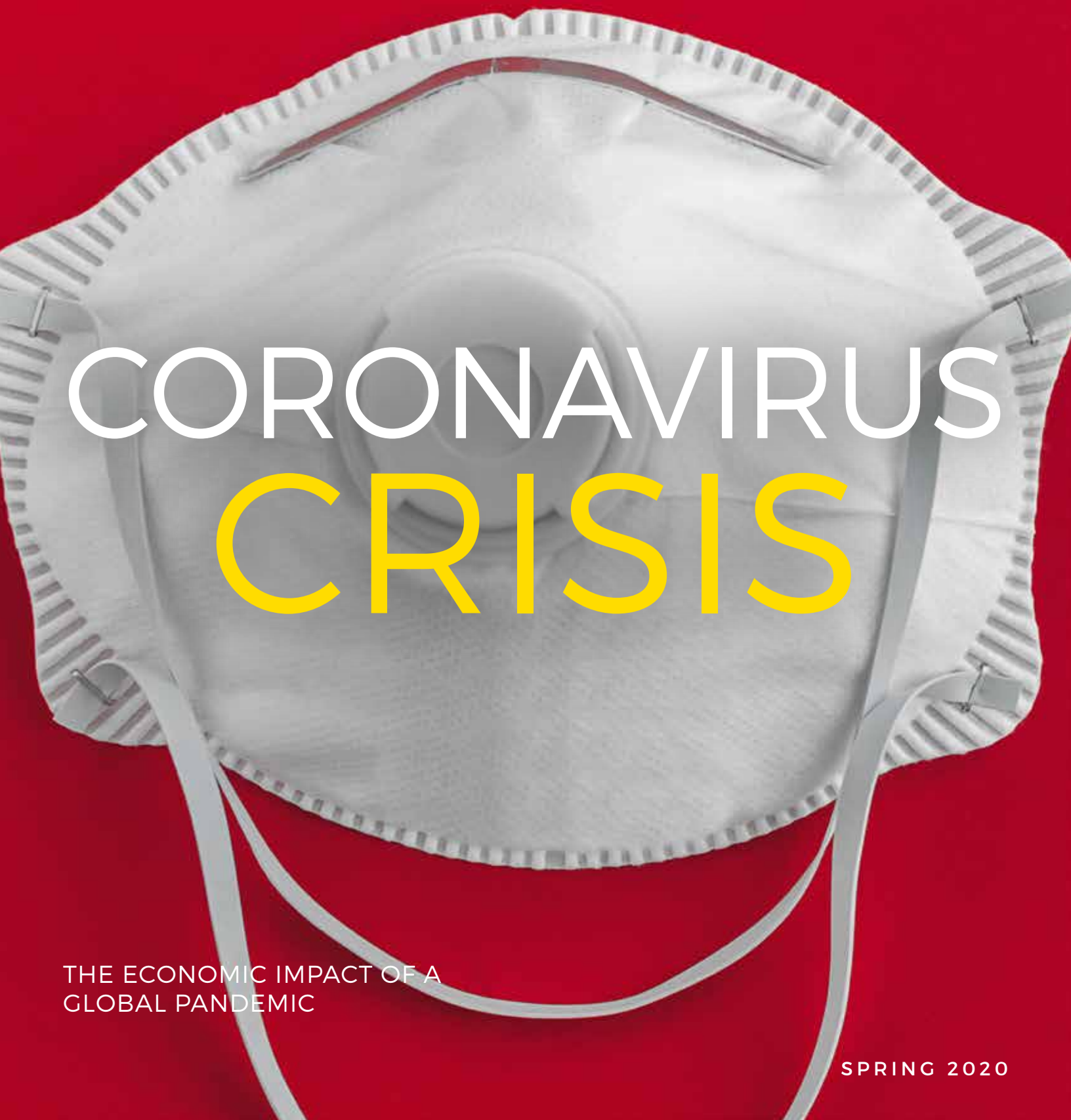

CORONAVIRUS CRISIS

THE ECONOMIC IMPACT OF A GLOBAL PANDEMIC

SPRING 2020

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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.

COVER
White medical face mask. (Antonio Rico)

INSIDE COVER
President Donald Trump speaks about the coronavirus as Vice President Mike Pence and Treasury Secretary Steven Mnuchin listen. (AP Photo, Alex Brandon)

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MESSAGE FROM THE DIRECTOR OF THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH

Taking the long view on the economy – and life in general – has become a lot harder in the era of the COVID-19 virus pandemic. We swim in a turbulent sea of alarming and fast-moving data streams that have turned our lives upside down in an instant, shortening our planning horizons to the next day or the next hour it seems.

Economists and forecasters are trying to look further ahead, to visualize and project how the trajectory of the economy will change when the virus matures and the spread of infection slows enough to let ordinary commerce resume. Those projections are fraught with uncertainty, as so much remains unknown. Yet, responsible actions can only be based on expectations of what lies ahead, even if that future remains fluid.

And so we bring you this issue of the Montana Business Quarterly to help foster a better understanding of the issues and sectors of importance those of us in the state face. I hope you find it valuable and I hope that you will stay safe and healthy in these difficult times.

Patrick Barkey
Director
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ENDING YOUTH HOMELESSNESS IN MONTANA

The Battle to Provide Housing and Assistance

BY DAPHNE HERLING

More than 1.5 million youth in the United States experienced homelessness during the 2017-18 school year. It's the highest number recorded in over 10 years, according to a National Center for Homeless Education report.

Housing first has become the rallying cry to address the issue. Historically, the approach has been one of *managing* homelessness, which has shifted to *ending* homelessness by providing housing. This has resulted in the federal government developing policies and funding mechanisms to avoid someone becoming unhoused by offering immediate, temporary supports to make sure a family can continue living with relatives, staying in their rental unit or elsewhere during a situation which might result in a bread winner losing their job. No matter the circumstances facing young people and their families who are experiencing a housing crisis, service providers are looking first at how to get them into housing. Once there, they can focus on other issues that might be present.

Children and youth who experience homelessness have profound challenges. In addition to stabilizing their housing situation, they need the tools and emotional support to survive without succumbing to the long-term effects of trauma. There are significant impacts on all people who experience homelessness, but children are especially vulnerable as they do not have the mechanisms to process and cope with the stress. Parental stress levels affect their children as well, especially when homelessness is a factor.

Homelessness adds a significant challenge to accessing health care and emergency rooms often become a primary source of care. Frequent moves resulting in changing addresses, lack of internet access to complete online applications, changing health care providers and lost or misplaced records, such as vaccination records or birth certificates, all create barriers.

Exposure to violence also has a dramatic effect. Children who witness violence are more likely to exhibit frequent aggressive and antisocial behavior, increased fearfulness, higher levels of depression and anxiety, and have a greater acceptance of violence as a means of resolving conflict.

Federal data from 2018 shows that in Montana there were 1,404 people experiencing homelessness – of those, 422 were families with children. Families with children represent approximately one-third of the total homeless population in both the United States and the Treasure State. In addition to families, there are 119 unaccompanied youth experiencing homelessness in our state who are under the age of 25, without a parent or a guardian.

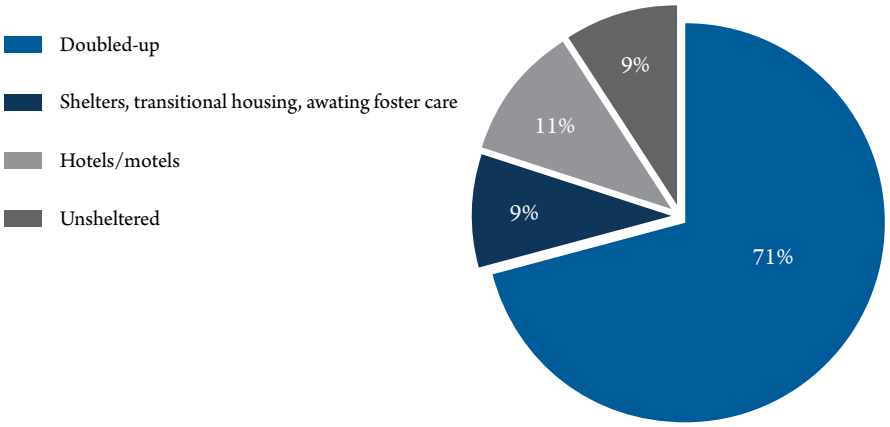
Of particular importance to Montanans is rural homelessness – 4.4 percent of rural youth ages 13-17 and 9.2 percent of young adults ages 18-25 experience homelessness. Their biggest challenge is a lack of services. Forty-six out of 56 counties in our state are considered frontier counties – this makes access to services an added challenge. Many of these families make their way to the Montana's urban centers where services are more available and where job opportunities are more plentiful.

Local school districts use different criteria for collecting data on unhoused school-aged children, resulting in a more accurate count. This data show that 3,606 students enrolled in public schools during the 2016–17 academic year were experiencing homelessness. Nineteen percent (692 youth) were unaccompanied youth. Calculations using both housing and school data estimate that 2,952 Montanan children under 6 years old are in families experiencing homelessness.

IN MONTANA, ONLY 67 PERCENT OF STUDENTS WHO ARE CONSIDERED HOMELESS GRADUATE FROM HIGH SCHOOL, COMPARED TO 86 PERCENT OF ALL STUDENTS.

The impacts on these young people are well documented. Early childhood development is understood to be a major determinant in a person's future. Healthy development in their early years (particularly birth to 3 years old) provides the building blocks for educational achievement, economic productivity, responsible citizenship, lifelong health, strong

Figure 1. Percentage of Montana enrolled homeless students by primary nighttime residence, school year 2016-17. Source: National Center for Homeless Education, U.S. Department of Education's EDFacts Initiative.



communities and successful parenting of the next generation. Experiences of homelessness during infancy and toddlerhood are associated with poor early development and educational well-being.

Figure 1 shows where students enrolled in public school spend their nights while they or their families were experiencing homelessness. Doubled-up refers to those young people who are living with another family. Unsheltered means students who are living in cars, parks, campgrounds, temporary trailers or abandoned buildings.

In Montana, only 67 percent of students who are considered homeless graduate from high school, compared to 86 percent of all students. Additionally, 21-23 percent of Montana students experiencing homelessness are identified as having a disability, representing 839 students in the 2016-17 school year.

To build resilience, all programs and policies should use a trauma-informed care approach, which has been shown to help all people experiencing homeless. This framework understands, recognizes and responds to all types of trauma and emphasizes physical, psychological and emotional safety. It helps survivors rebuild a sense of control and empowerment. Trauma affects the individual, families and communities by disrupting healthy development, adversely affecting relationships and contributing to mental health issues, including substance abuse, domestic violence and child abuse.

Connectedness with a parent increases student resilience and moderates the association between homelessness and negative identity or the ability to function in social situations. However, a comparison of students experiencing homelessness with their housed peers shows that only 42 percent of unhoused youth had a high connection with a parent, compared to 68 percent of housed youth. Children experiencing homelessness are seven times more likely to be placed in foster care, which brings with it a multitude of additional stresses and potentially a higher level of trauma.

The subset of unaccompanied youth experiencing homelessness needs special mention. Once homeless, youth become more vulnerable to health challenges, physical harm and abuse. It also increases their involvement in child welfare, juvenile justice, and the criminal justice systems, which often complicate their attempts to meet basic needs.

Many jurisdictions lag behind in implementing changes to federal law that strengthen access to education for youth experiencing homelessness. A few jurisdictions use words such as incorrigible, unruly, delinquent, vagrant or wayward when describing unaccompanied youth. A small number of jurisdictions define running away and truancy as status offenses and explicitly make it a crime to shelter or house a youth who has run away regardless of the reasons for the young person leaving home.

On a more positive note, many jurisdictions authorize or require health care, education and other services to unaccom-

panied youth even in the absence of parental consent. And most jurisdictions provide youth with some ability to act on their own behalf.

The Coordinated Entry System is used by many states, including Montana. Coordinated entry is a process developed to ensure that all people experiencing a housing crisis have fair and equal access and are quickly identified, assessed for, referred, and connected to housing and assistance based on their strengths and needs. Once an individual or family is housed, other referrals can take place to get health care and other needed services. Although still in its infancy in Montana, the goal of the Coordinated Entry System is that "all organizations in the state that serve people who are experiencing homelessness or are at risk of experiencing homelessness will participate."

Taking a more pragmatic and informed approach, and using evidence-based interventions, such as housing first, not only improves lives but also reduces ineffective, futile public service spending. Ending homelessness requires not only a vigorous response to existing homelessness, but interventions reaching right back to the roots of homelessness. Our society must do a better job of tackling the poverty, violence, trauma, educational disadvantage and discrimination that often begins the downward spiral into becoming homeless. Until then, federal, state and local entities need to improve the crisis response. There are too few shelter programs to meet the existing need and as a result youth are regularly turned away without a place to sleep. A larger investment is needed to prevent youth from sleeping on the streets or doubling up in unstable situations and to more quickly facilitate their reunification with family when possible.

Daphne Herling is a former senior research analyst at the Bureau of Business and Economic Research and the former director of Montana KIDS COUNT.


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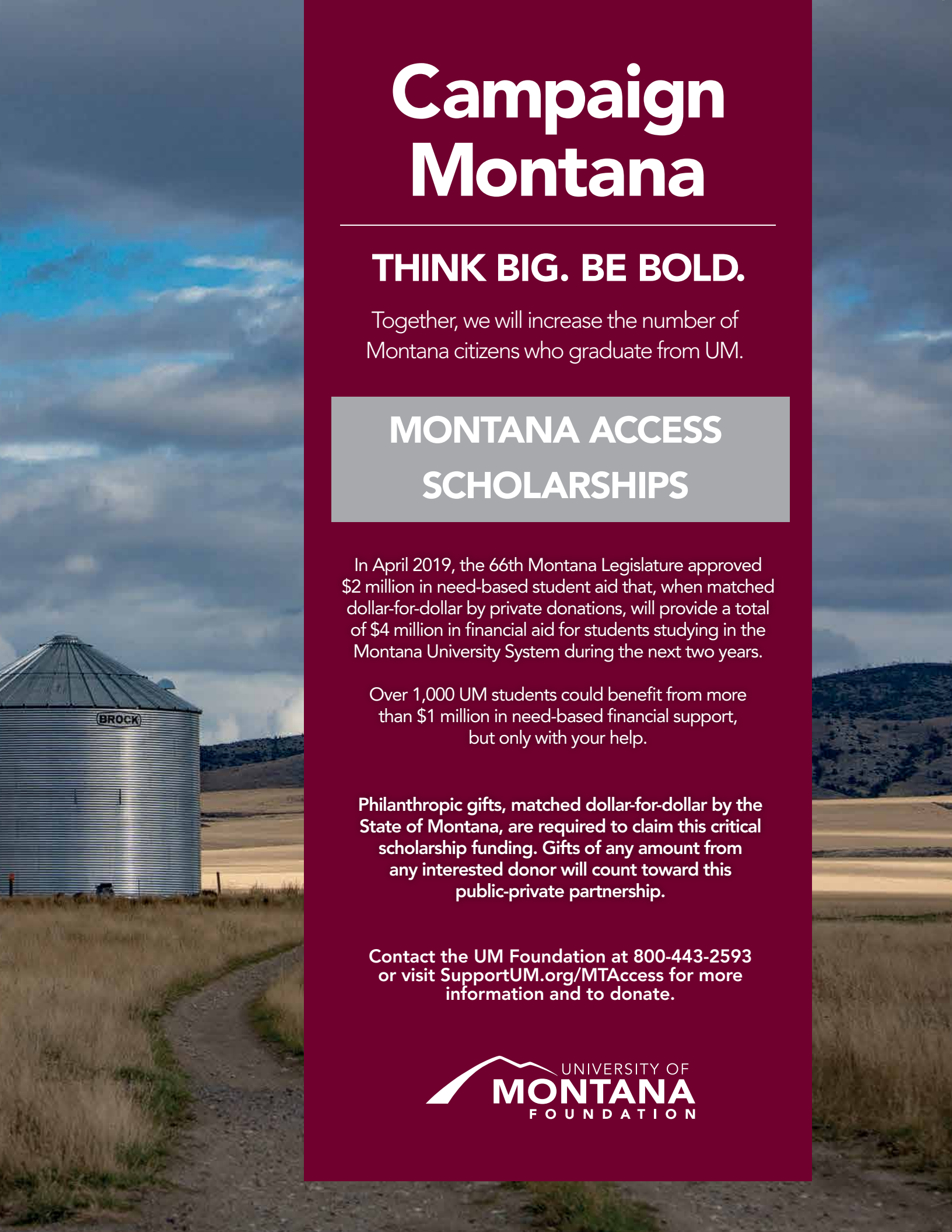
Photo by Donnie Sexton



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THE ECONOMIC IMPACT OF A GLOBAL PANDEMIC

Can We Expect a Recession?

BY ROBERT SONORA

On December 31, 2019, in the city of Wuhan, China, a port city of 11 million people, the World Health Organization (WHO) was informed of several unusual cases of pneumonia. A week later, the WHO announced they had identified a new virus, part of the coronavirus family, and named it COVID-19.

The first death in the U.S. was on March 5 in Washington state. By that time the global death toll had grown to about 3,500 people. By the first week of March, Italy had closed all its schools. By March 11, the Trump administration had restricted travel from Europe for 30 days. A day later, the WHO would report over 117 countries with confirmed cases of the illness – the number of infected reaching over 125,000.

The effect of the coronavirus outbreak has rippled through global economies. The S&P 500, which had peaked at 3,386 on February 19, had fallen roughly 25 percent to 2,532 by March 12. The VIX index, which measures stock market volatility and is often referred to as the fear index, reached 75.5 – its highest level ever.

Over the same period, the benchmark 10-year bond yield fell 1 percentage point to .84 percent – after bottoming out at .54 on March 9 – as investors fled to safety. While longer maturity bond yields have generally drifted downwards over the past 40 years, the deviation from the long run trend (about -1.8 percentage points) is on par with the rates seen during the last financial crisis.

Figure 1 shows the 10-year bond yield and the VIX index, July 1, 2019, through March 12, 2020. The 10-year bond yields dropped dramatically at the end of February. As of mid-March, 10-year yields have stabilized between .50 – .75 percent.

Figure 2 shows the S&P 500 index for the same period. Together the data show the significant global economic

With a nationwide blood supply shortage, donors wait in chairs set eight feet apart during the Coronavirus pandemic at the Bristol Motor Speedway in Bristol, Tenn. (AP Photo, David Crigger)

Figure 1. 10-year bond yield and the VIX index, July 1, 2019, through March 12, 2020. Source: FRED II, St. Louis Federal Reserve Bank.

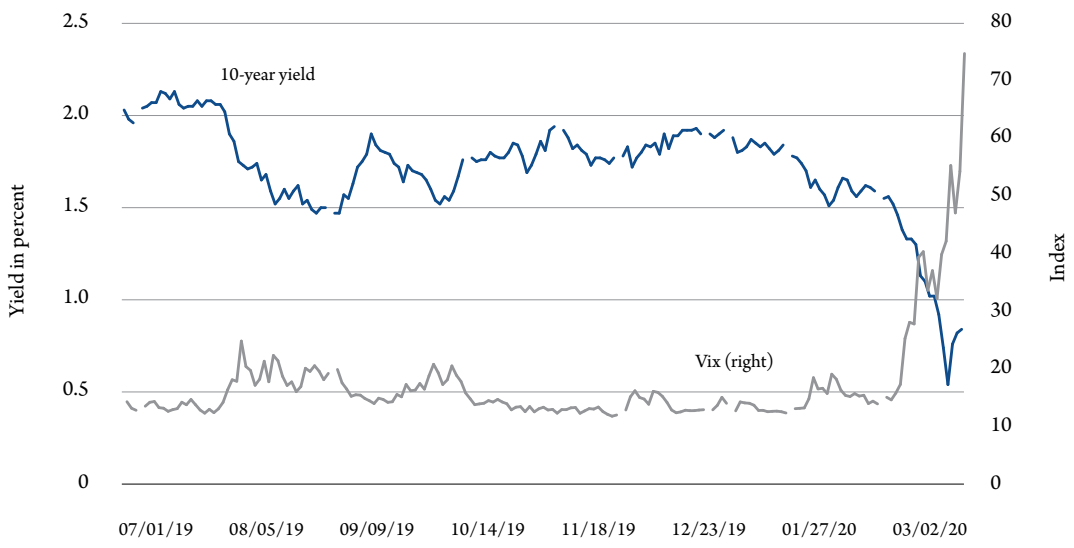
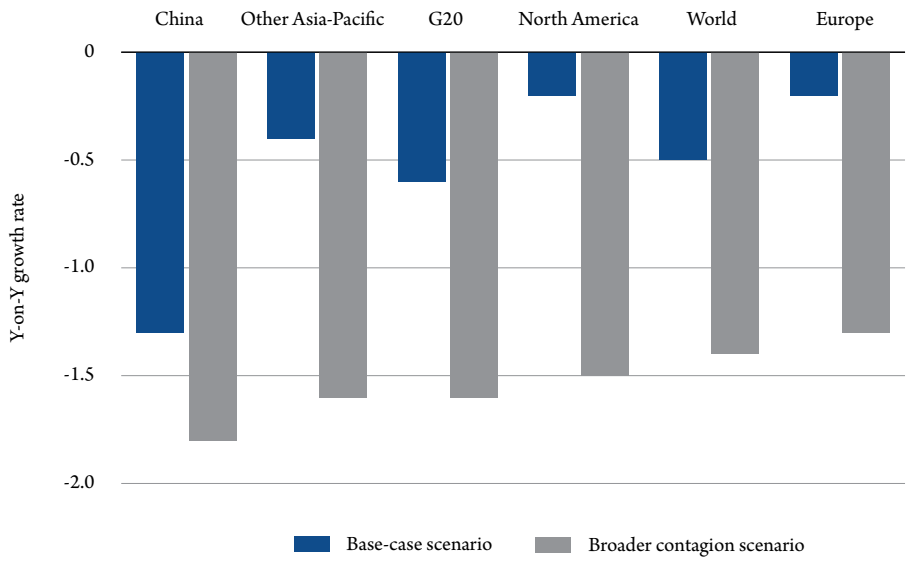


Figure 2. S&P 500 index, July 1, 2019, through March 12, 2020. Source: FRED II, St. Louis Federal Reserve Bank.

Figure 3. OECD estimates of the impact of coronavirus on GDP growth. Source: OECD calculations using the NiGEM macroeconomic model.



impact of COVID-19. Movement in each of the indicators represent new information and uncertainty regarding the future of this pandemic.

Lost in the hubbub is the recent price war between Russia and Saudi Arabia that drove oil down to below $40 a barrel – futures markets forecast sub-$50 until December 2023. Break even for the Bakken oil field in North Dakota is $50 bbl (barrel of oil). Add to that the ongoing trade war, uncertainty surrounding Brexit and you have a potent brew of economic turmoil. Though none of these events have had a similar impact on financial markets as COVID-19 has – tariffs imposed by the U.S. increased the VIX index to 40.7.

Financial markets are interpreted as a barometer of the underlying health of an economy – they are pushed by economic shocks. Negative shocks can push the economy towards a recession or a slow-down, while positive shocks accelerate the economy. Recessions are the result of either supply- or demand-side shocks. Demand-side shocks are more frequent. They result in rising unemployment, correspondingly slower economic growth and falling inflation. On the other hand, supply shocks are accompanied by higher unemployment and inflation.

The coronavirus is the economic equivalent of a perfect storm consisting of both negative supply and demand shocks. Because both shocks are happening simultaneously, macroeconomic models demonstrate that inflation will remain muted, but output growth will slow or become negative.

Base case estimates from the Organization of Economic Cooperation and Development (OECD) show that if the virus is contained, global growth will be about .5 percent below previous projections. The U.S. forecast has been reduced by .1 percent to a year-on-year growth rate of 1.9 percent. The OECD also considered a downside scenario, which is looking more realistic, that will have a larger impact on the global economy – about a 1.5 percent fall in global GDP (Figure 3).

Most economists and economic institutions, e.g. The International Monetary Fund, World Bank and Organization of Economic Cooperation and Development, all agree what the sources of the negative supply and demand shocks are, which are highlighted in Table 1. Concentrating first on the supply-side, the supply chain has received most of the attention. And much of this has to do with the intermediate parts in Asia. Many have pointed to the SARS crisis as the best comparable precedent to the current pandemic. However,

Figure 4a. Probability of a recession occurring in May. Source: Bureau of Business and Economic Research.

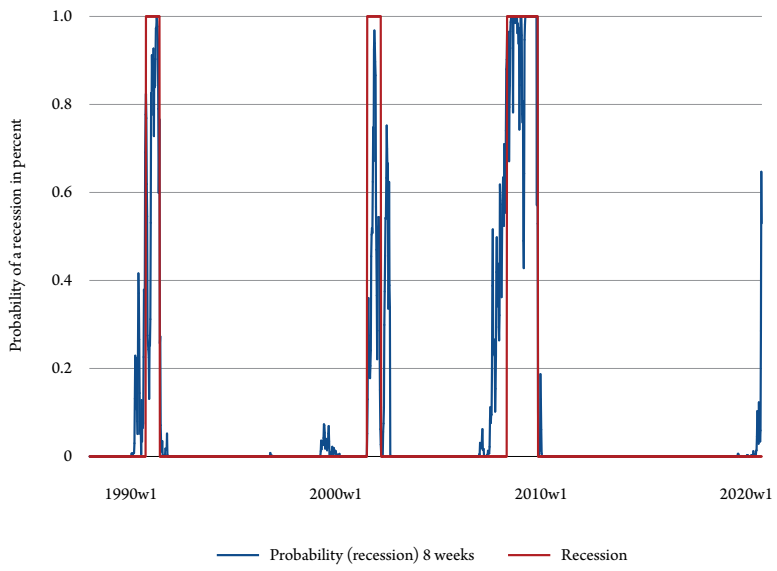


Figure 4b. Probability of a recession occurring in June. Source: Bureau of Business and Economic Research.

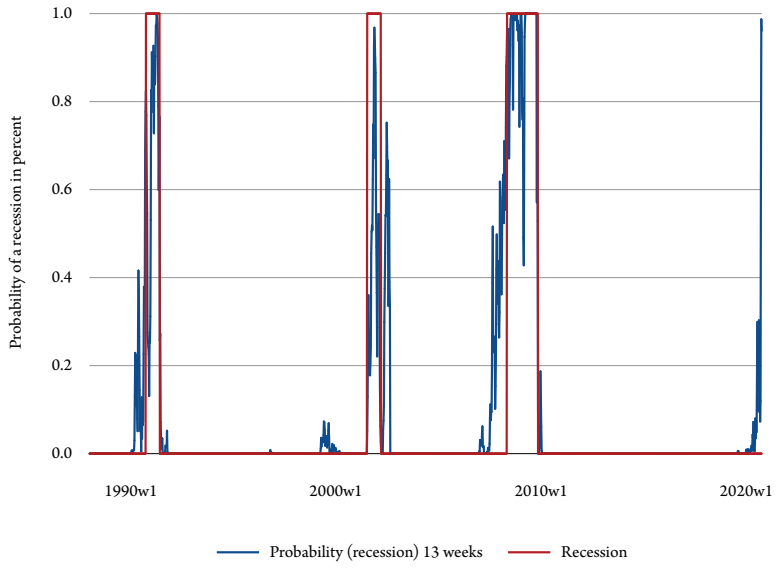


Figure 4c. Probability of a recession occurring in September. Source: Bureau of Business and Economic Research.

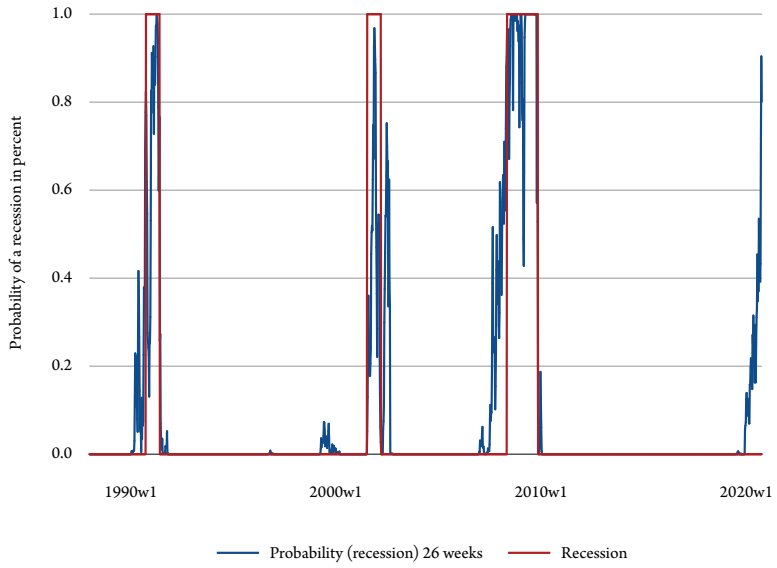


Table 1: Economic shocks associated with coronavirus. Source: Adopted from "OECD Interim Economic Outlook – Coronavirus: The World Economy at Risk," March 2, 2020, by Laurence Boone.

Containment measures	Negative Supply Shocks	Negative Demand Shocks
Quarantines	Factory closures	Consumer/Firm confidence
Travel restrictions	Reduction in services	Travel plans
Close public space/meetings	Supply chain	Education and entertainment

COVID-19 is likely to have further-reaching economic consequences than SARS, because China's role in the world economy has more than doubled since 2002.

One of the first industries to feel the impacts of the coronavirus on the supply chain was the automobile industry. In February, Italian Fiat-Chrysler had to temporarily shut down plants in Serbia because it couldn't get parts from China, leading to further disruptions downstream and further supply-side shocks.

On the demand-side, if people are temporarily idled, incomes begin to decline, along with spending. This is exacerbated by the loss of confidence and declines in household wealth, manifested through a falling stock market. Declines in travel will have a pronounced effect on tourism. For example, tourism accounts for roughly 13 to 15 percent of Italian GDP – Italy could very well be in a recession right now.

Recession?

How has this shifted the discussion about whether or not global economies will experience a recession this year? Most experts agree that the probability of a recession this year has increased dramatically to between 50 and 90 percent.

Using a variation of a model proposed by the Federal Reserve Bank of New York, we estimate the probability of a recession for 2020 in Figures 4a through 4c. They show the probability of a recession in the U.S. over eight, 13- and 26- week future time horizons.

The blue line represents the estimated probabilities and the red line is official NBER recession dates. The figures show the probability of a recession in the U.S. grew dramatically in the first eight weeks or so of 2020 - going from effectively zero in the first week of January 2020 to about an 89 percent chance of recession within 26 weeks.

As the figures show, the probability is increasing as we move forward in time. The estimates show that there is approximately a 58.1 percent chance of recession in eight weeks (the beginning of May). That increases to 97.1 percent in 13 weeks (June) and 88.7 percent in September. These estimates are in line with other estimates. Bloomberg Economics' estimates the probability of a recession happening within 12 months to be 52.8 percent and JPMorgan forecasts a recession by July.

Economic Policy

The goal of stabilization policy is to "right the economic ship" in adverse economic conditions. The caveat is that most policy is better suited to demand-side rather than supply-side shocks. In a demand-side recession, inflation slows and output falls. By injecting stimulus into the economy, policymakers can mitigate the effects of the downturn by increasing demand for goods and services without worrying about inflation.

Stabilization policy takes two basic forms: monetary and fiscal. Monetary policy is conducted by the Federal Reserve by raising and lowering the interbank target interest rate, called the federal funds rate (FFR). In a surprise move, between March 3 and March 15, 2020, the Fed reduced the FFR to 0% in an effort to provide assurance that policymakers were going to work at offsetting negative demand shocks and a stock market in free fall. This effort was largely unsuccessful. On March 12, the Fed announced another round of quantitative easing (QE) by buying up to a $1.5 trillion in bonds to stabilize financial markets. On March 15, the Fed reduced the FFR to 0 – .25% and will buy at least $700 billion in government and mortgage-backed bonds.

Over the same weekend, the House of Representatives passed HR 6201, the Families First Coronavirus Response Act, by a vote of 363 to 40. An initial proposal to provide

A shopper pays for packages of toilet paper and hand towels at a Costco warehouse as fear of the coronavirus spreading continues in Lone Tree, Colo. (AP Photo, David Zalubowski)

payroll tax relief was rejected because it would not help those who need it the most – those who are technically employed, but ill or under quarantine, and cannot work from home.

The bill contains a variety of economic support measures, so called "automatic stabilizers" – 14 days of paid sick leave and food aid, which is essentially an extension of unemployment insurance. The package also includes free COVID-19 testing, federal funding for Medicaid, and small business tax credits.

At the time of this writing, no price tag has been attached to this package, but it will be costly. However, there is a silver lining, government bond yields are so low that the Feds can effectively borrow at 0 percent interest to finance the level of fiscal stimulus required – which could be substantial. On March 17, a $850 billion package was announced.

Conclusion

There is no telling how severe the C-19 recession will be. Recent guesstimates put second quarter economic growth in the –5 to –10 percent range. It goes without saying it has disrupted the normal flow of economic activity in structurally different ways to the 2008 financial crisis. There is also speculation that this recession will lead to another financial crisis, though not of the same ilk as the last one.

Today, banks are better capitalized, household debt burdens are lower, and personal savings are higher. However, the perfectly rational response that people stay quarantined will have considerable demand effects in the short run, but once the quarantine is over, pent-up demand will get the economy moving again. We just need to help households and small businesses weather the immediate challenges.

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

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THE FUTURE OF WORK

How Will Montanans Participate in the Next Industrial Revolution?

BY MICHAEL BRAUN AND SCOTT LATHAM

In 2018, a painting entitled "Portrait of Edmond de Belamy" was sold at auction for close to half a million dollars. At first glance, there was nothing that made this particular piece stand out from the rest of the lot, which included works by Andy Warhol, Jeff Koons and Banksy. But a closer look at the artist's signature (an algebraic formula) revealed what made this painting so unique and valuable – it had been created by artificial intelligence after being fed over 15,000 art images dating from the Renaissance to today. The auctioneer's dropping hammer on the machine-generated painting confirmed that the fourth industrial revolution is already well underway.

A number of nascent technologies, such as smart sensors, machine learning, augmented reality and blockchain, are rapidly converging. At the center of this discussion lies the question of whether the fourth industrial revolution will have created or destroyed more jobs. This issue may appear less relevant to Montanans, given the state's preponderance of the agriculture, timber and tourism sectors. Yet, it is imperative that we aren't misled by the "future of work" moniker, putting off till tomorrow what should be addressed today. Rather, we would be wise to heed the words of novelist William Gibson, who coined the term "cyberspace" nearly 40 years ago: "The future is already here – it's just not very evenly distributed."

The First Three Industrial Revolutions

The first industrial revolution (1760s to 1840s) was defined by an introduction to mass-production methods. With steam as the main propellant for automation, cottage industries such as textile production were displaced by mechanized factories. The weaving process, previously done in individual

homes and by hand, now shifted to shop floors where power looms produced fabrics more rapidly and at a fraction of the cost of labor.

Montana was largely unaffected by this first boom, yet the Treasure State would occupy a leading role in the second industrial revolution (1870s to 1910s). Butte's copper legacy electrified America and towns like Somers built the railroads facilitating the movement of people and goods across the nation.

The transistor, invented by Bell Laboratories in 1947, ushered in the third industrial revolution. Personal computing and software applications, charged by increasingly powerful microprocessors, changed everything from bookkeeping, drafting and design engineering, to word processing and typesetting. And with the advent of the internet, we witnessed the dawn of the information age, which is where we find ourselves today. Helping to stoke the engines of this particular wave were Montana-based laser and optics companies like Altos Photonics and customer-relationship management software provider RightNow Technologies, now part of Oracle.

The common thread across all three spurts of modernity was what Austrian economist Joseph Schumpeter termed "creative destruction" – while some professions disappeared, new ones were forged. Weavers, street lamp lighters, typing pools, or Blockbuster Video attendants gave way to machinists, electricians, software developers and professional bloggers.

Yet another, more salient pattern to observe is that each industrial revolution leveled its destructive creativity to an increasingly microeconomic resource unit. While the first unleashed production capabilities at a national level, the second concentrated productivity gains using assembly lines on particular sectors, beginning with the automotive industry. By the time computing became widespread in the 1960s, the focal point turned to the individual organization itself, whose corporate functions and departments would become streamlined through a combination of hardware and software.

Economists have long held that the net effect of jobs created versus destroyed, following a painful adjustment to the disruption, represents a wash. However, this time around it may well be different, because the attention of the resource to be mechanized is aimed squarely at the worker.

The Scale, Speed and Nature of the Reskilling Revolution

Media reports often paint either a dystopian or utopian scenario of what's to come with this fourth industrial revolution.

Table 1. Anticipated impact of future of work innovations on Montana's economic sectors.

Industry/sector	Future of work technology impact
Energy	• Drones for power line inspection and corridor mapping • Internet of things (IoT), AI and analytics for customer and credit management
Manufacturing	• Augmented reality and robotics for predictable physical work
Tourism and recreation	• Concierge robots, digital assistance and service automation using smart agents
Health care	• AI in medical coding and diagnostics and robotics in patient care • Reliance on wearables, mobile health devices and telehealth for diagnostics
Transportation and logistics	• Machine learning for routing and autonomous trucking • Software-based smart contracts for supply chain management
Real estate and construction	• Blockchain for direct buyer-seller real estate and rental property transactions • 3D-printing for material deposits (e.g., concrete)
Retail trade and food services	• IoT, facial recognition and deep-learning for cashier-less shopping • Robot-assisted food preparation and delivery
Educational services	• AI, machine learning and augmented reality for adaptive learning experiences

And the statistics underlying these reports are often murky. For instance, numbers by the Brookings Institute forecast that 25 percent of jobs in developed markets will fully disappear in the next decade. According to their research, the most vulnerable occupations to automation are in production and food services, with an 80 percent displacement rate. And a third of all job functions are technologically replicable.

The speed and scale at which this is unfolding is unprecedented, largely due to the rapid coming together of these super technologies on a global scale. And the employment landscape is bound to be inescapably altered. Widespread adoption of these innovations are expected to have far reaching implications for Montana's labor market – both for blue- and white-collar professions. Table 1 provides an overview of how these emerging technologies are expected to transform our state's jobs.

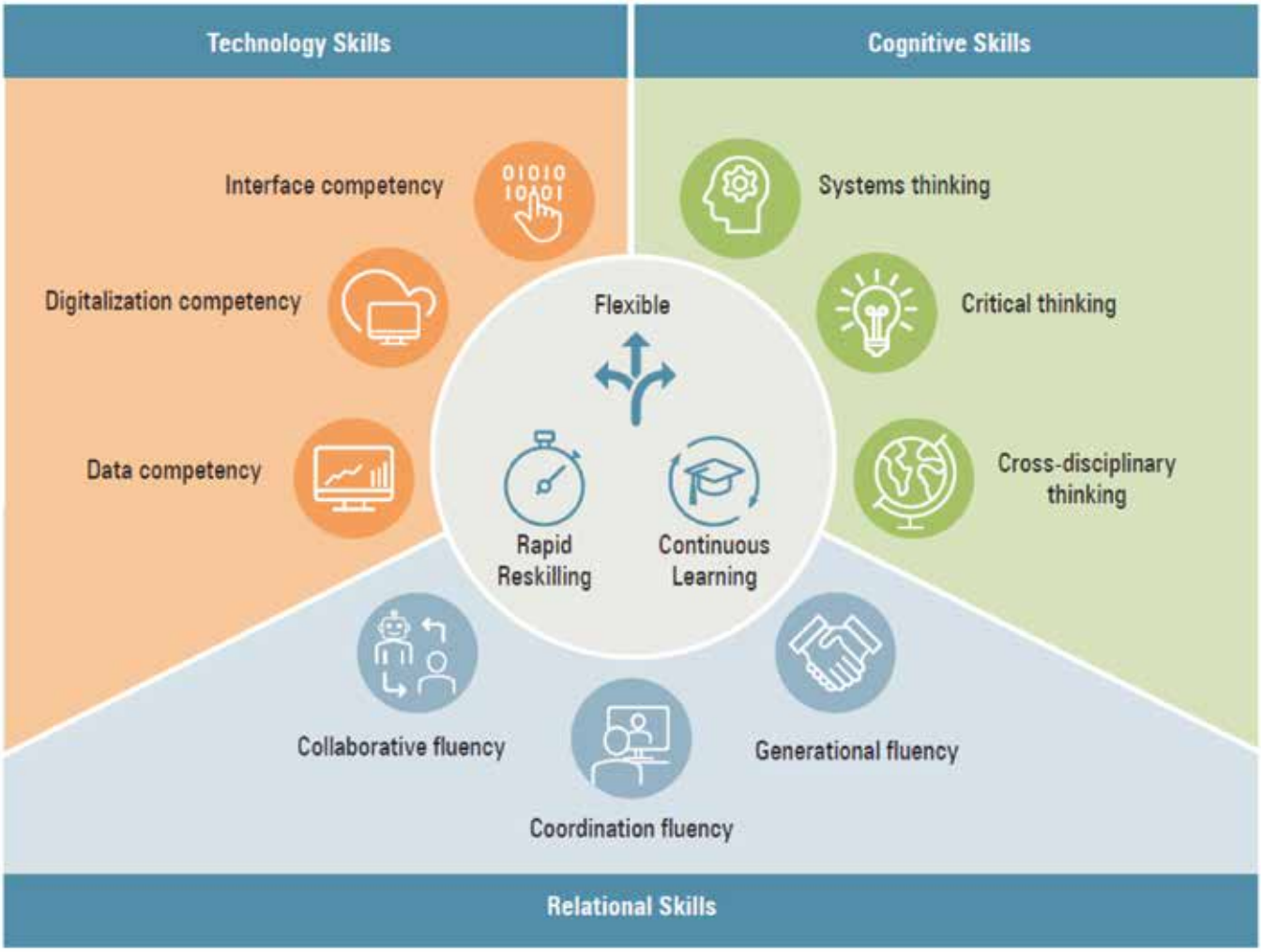
This forthcoming transformation will require an extensive overhaul of the existing workforce. And some sectors are already engaging in reskilling efforts. Just last summer, Amazon announced Upskilling 2025, a $700 million investment to retrain a third of its employees. While each industry will have its own reskilling agenda, some capabilities will intersect workers across all sectors. These capabilities fall into three broad categories: technology skills, cognitive skills and relational skills (Figure 1).

Here is what these three categories encompass:

Technology Skills

- *Data competency:* The digitization of tasks will transform all organizations into data-driven entities. Accordingly, tomorrow's workforce will need to understand and manage data at every level – from data capture to data cleaning, data integration and data analytics – to make informed decisions about customers, employees, processes and performance.
- *Interface competency:* Workers across all levels of management will be called to interface with technologies to accomplish their tasks. Already, radiologists are increasingly working with artificial intelligence to improve diagnostic accuracy, while chefs are making data-driven decisions to ensure food safety.
- *Digitalization competency:* Workers will need to build their proficiencies to navigate and integrate cybersecurity, augmented reality, 3D-printing, and other pervasive technologies, with a keen awareness of how digitization impacts not just core processes in their organization, but their industry at large.

Figure 1. Unique and necessary elements of the reskilling revolution.



Cognitive Skills

- *Systems thinking:* With digital platforms such as Amazon and Salesforce forming the new basis of economic activity, tomorrow's workers need to take a holistic approach to workflow processes that integrate machines, humans and the organization. Understanding Amazon's cloud services may well be necessary, but it won't be sufficient unless workers can also assimilate the interconnected picture.
- *Critical thinking:* As disruptive technologies gain traction in the workplace, asking the right questions becomes increasingly important. In attempting to bring humanity's wisdom to machines, all organizations will need to think critically about the ethical and moral implications that are bound to surface.
- *Cross-disciplinary thinking:* An anticipated shift towards more project-based management work will render organizational silos extinct in the connected organization. Self-managed teams, consisting of diverse individuals with agile mindsets, will be better positioned to assemble and disband on an as-needed basis.

Relational Skills

- *Collaborative fluency:* As the human-machine interface takes hold it will impact the very fabric of most organizations. Workers will need to learn to collaborate in an environment defined by continuous learning, diversity of input and engagement of new ideas, while concurrently working alongside robots and artificial intelligence platforms.
- *Coordination fluency:* Cubicle farms, water cooler meetings, and a 9 to 5 workday are already giving way to new modes of work, with individuals and organization learning to work together in a distributed fashion across geographic regions and time zones. A reliance on freelance and gig workforces will be central to managing projects and teams.
- *Generational fluency:* Tomorrow's work environment will be represented by three and at times four generations, each with its own experiences, values and location in history. An appreciation and understanding of how these innovations integrate with and deploy across generational and digital experiences will garner a premium in the labor market.

Montana and the 4th Industrial Revolution

Where does this data-driven revolution leave Montana? Some parts of our state seem to be favorably positioned due to a combination of a lower cost of living, higher quality of life and remote work arrangements. Moreover, a McKinsey Global Institute research report notes that college towns like Missoula will be the main beneficiaries, as universities take their place alongside economic clusters to help prepare the workforce of tomorrow.

We're already seeing the private sector, represented by companies like Missoula-based LumenAd and ATG, joining forces with educational institutions, economic development agencies and the state to ensure a steady stream of capable workers. Our regional colleges and universities will have to continue to revamp their offerings to meet the changing labor market demands defined by a faster cycle of skills development.

This will require supplementing traditional core degree offerings, such as the bachelor's degree, with shorter-term, bite-sized certifications and microcredentials that can bridge the gap between learning and doing more effectively and efficiently. In some cases, this will entail breaking down the existing menu of college majors, then reformulating and repackaging their underlying ingredients into corporate training and workforce development programs tailored to specific market needs.

In addition, as central nodes in these evolving ecosystems, institutions like the University of Montana, Montana State University and other colleges within the Montana University System, will have to encourage and facilitate graduates' lifelong education requirements by offering access to continuous learning at various stages of their career ladder.

For more rural communities, which risk being left behind in this brave new world, we will have to insist on even greater collaboration between business, education and government while fully leveraging technologies to help compress our state's vast geographic expanse.

The common thread running through all of these initiatives boils down to a simple adage: together is better. To what extent Montana will participate in the fourth industrial revolution remains to be seen, but our collective efforts can go a long way to secure not just Montana's economic viability in the future of work, but more importantly the voice of its workers.

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NEW STUDY GAUGES HUTTERITE ECONOMIC CONTRIBUTIONS

Hutterite Businesses Play a Significant Role in the State's Economy

BY PATRICK M. BARKEY, GEORGE HAYNES AND JOEL SCHUMACHER

This article digests a study of the economic contributions of the Lehrerleut branch of the Hutterite communities in Montana performed by the Bureau of Business and Economic Research at the University of Montana (BBER), in partnership with the Montana State University Department of Agricultural Economics and Economics. The study made use of a detailed financial database on the operations of a large fraction of the Hutterite communities that enabled us to track actual revenues and purchases for a three-year period.

The role of Hutterites in the local economy and the contributions made by the communities to the total economic pie are not well understood by many Montanans. The broad goal of this study is to address that information void and highlight the economic impact the Hutterite communities have on their local economies, as well as on the economy of the entire state.

About the Hutterites

Hutterites have had an important presence in Montana for more than 100 years. They are comprised of 53 communities of families with a centralized leadership structure and common ownership of land and other assets. The more than 5,000 members in our state are second in number only to South Dakota among U.S. states. The two prominent branches of Hutterites in Montana are the Lehrerleuts and Dariusleuts.

Hutterites came to North America from Europe in the 1870s as a means of escaping religious persecution. One of the oldest communal religious orders, they originally settled in South Dakota, which remains the largest concentration in the United States. The largest number of communities is in Alberta. Approximately 75 percent of Hutterites in North America are in Canada, just to the north of Montana.

Members of Hutterite communities live collectively, in groups of families governed by an elected minister. The communities collectively own land, produce and market agricultural and other goods and services, and pay taxes.

Dan Kleinsasser, of the Golden Valley Hutterite Colony near Ryegate, Mont. bends a steel roof at Valley Steel, LLC. (AP Photo, Larry Mayer)

Their religious orientation does not affect the tax treatment of their land and business property; in some rural communities where they operate they are the largest single property taxpayer. The fact that members of communities do not receive salaries for work done within the community does impact their federal and state income tax contributions.

In Montana the communities are largely located in the central portion of the state, east of the Continental Divide. The communities focus on farming and agriculture, including value-added production and farm-to-table distribution. They have also diversified into construction, light manufacturing and a variety of specialized products and services.

Two of the three branches of the original Hutterites who moved to North America in the 1870s have moved to Montana: the Dariusleut branch and the Lehrerleut branch. "Lehrer" is the German word for teacher and the word "leut" translates as folk or people. Of the two, Lehrerleut communities are more numerous, particularly along the Rocky Mountain front in north-central Montana.

The Lehrerleuts

This study focuses on the Lehrerleut branch of Hutterites residing in Montana. In 2017, there were 4,318 total Lehrerleut members, with 57 percent of the members between 19 and 64 years old, 33 percent less than 19 years old, and 10 percent at least 65 years old. The Lehrerleut branch members are somewhat younger than the overall population of Montana, where 60 percent of Montanans are between 19 and 64, 23 percent are less than 19, and 17 percent are at least 65 years old.

The analysis conducted in this study was based on financial records which were available for a subset of Lehrerleut communities which included 86 percent (3,749 of 4,318) of the Lehrerleut branch members in Montana. The data described and the impacts reported in this study pertain to this subset of the Lehrerleut communities, which are themselves a subset of all of the Hutterite communities in the state. Doubtless, all of the information and findings of this report would be larger than those presented here – in this sense, the findings here are conservative, since the economic activities and hence the economic impacts of all Hutterite communities is larger than those reported here.

This subset of Lehrerleut communities with financial data available has a slightly younger population profile than the Lehrerleut total. They had a higher percentage of young people less than 19 years of age (37 percent versus 33 percent); and,

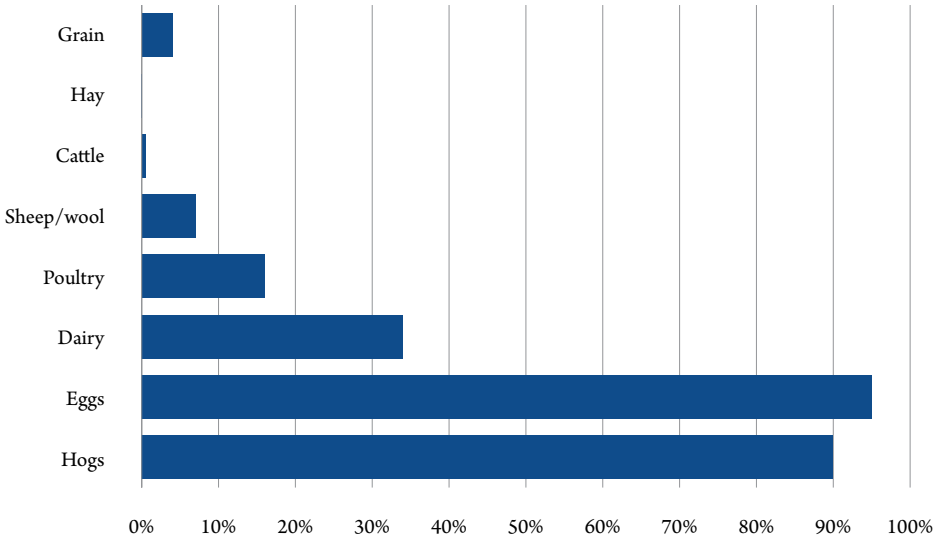

Figure 1. Share of total cash receipts produced by Lehrerleut communities in Montana. Sources: National Agricultural Statistics Service, Helena Office and Financial Statement Information supplied by the Lehrerleut communities.

a lower percentage of working age people (54 percent versus 57 percent), with a similar percentage of people 65 years of age and older (9 percent versus 10 percent).

The Lehrerleut communities produce a variety of agricultural commodities. Based on cash receipts information, over 80 percent of the value of their production is derived from grain (39 percent), hogs (29 percent), and eggs (13 percent). They also generate significant cash receipts from dairy (9 percent), cattle (8 percent), and other enterprises.

The communities produce over 90 percent of the hogs and 95 percent of eggs, 34 percent of dairy and 16 percent of poultry produced in Montana (Figure 1). While they also produce grain and cattle, these enterprises make up a very small portion of the state's overall production. The communities implement cutting-edge technologies to help promote efficiency and reduce labor requirements in their operations. These innovations along with their unique labor force have allowed them to venture into underdeveloped markets in the state, primarily in hog and egg production.

In addition to the Lehrerleut communities' own production activities, a new collaboration with an external partner has resulted in the construction and operation of an egg-processing facility in Great Falls. The Lehrerleut communities contract with Wilcox Farms, Inc., a Washington-based egg company, is to manage the facility and purchase local production. The processing facility employees 50 workers, none of whom are Lehrerleut community members.

In addition to these agricultural activities, some communities have recently diversified into specialized manufacturing and fabrication. While mostly self-sufficient, producing everything from clothing to buildings with their own labor, they do contract with outside vendors for a variety of goods and services. The Lehrerleut communities also purchase workers' compensation insurance for members engaged in these activities.

As owners of land and equipment, they pay substantial personal and real property taxes, and members and entities are also subject to state and federal income taxes. With respect to property taxes, the Lehrerleut communities construct substantial improvements that generate significant tax revenue which would not otherwise be realized in rural areas.

Economic Contributions of the Hutterite Communities

An economy that does not include the 81 farming operations owned by the 38 Lehrerleut communities that are analyzed in this study is clearly a smaller economy. The spending, income and production of the communities, in addition to the jobs and spending represented by the egg-processing facility

Table 1. Economic contributions of the Lehrerleut communities in Montana. Source: Bureau of Business and Economic Research.

Category	Units	Impacts
Total employment	Jobs	2,191
Personal income	$ millions	63.2
Disposable pers. income	$ millions	54.1
Output	$ millions	365.3
Population	People	5,323

that is jointly owned by 30 communities, is significant. But the contributions of the Hutterite communities to the state economy are larger than what we described in the previous section.

Our basic finding is that the presence of the 81 farming operations owned and operated by the 38 Lehrerleut communities examined in this study support production, employment and income in the Montana economy that is significant in size and scope.

Because of the presence of the Lehrerleut communities in the state, there are:

- 2,191 more permanent, year-round jobs.
- An additional $63.2 million in income received by Montana households, annually.
- $365.3 million more gross revenue received by Montana business and non-business organizations, annually.
- More than 5,300 more people in the Montana economy.

While a large portion of these economic contributions are associated with the communities themselves, non-community businesses, workers and households reap considerable economic gains as well. This is easily seen from a more detailed look at the jobs and revenues that owe their existence to community activities. The 2,191 jobs in the overall economy that are supported by Hutterite operations in the state include significant numbers of jobs in construction, retail trade, professional business services, health care and government.

Conclusion

What would the economy of the state of Montana look like if the Hutterite communities were not present? That is the question posed in the study. Addressing this hypothetical question offers the chance to bring into clearer focus how the economic activities that take place in the 81 separate farming operations and other operations of the 38 communities interact with the rest of the economy to produce more jobs, more income, and more sales revenue for the economy as a whole.

The information is especially relevant because the rural, collective, and religious-oriented nature of Hutterite communities, together with a tradition of shunning public attention, has limited awareness of their economic importance for many Montanans.

This study took advantage of a wealth of data on the operations of the 38 Lehrerleut communities whose complete financial records were made available. The estimation of the economic contributions made use of a state-of-the-art policy analysis model, leased from Regional Economic Models, Inc. (REMI), that has been specifically constructed and calibrated for the Montana economy. While some Hutterite communities whose data were not available were not included in the estimated economic contributions, the results nonetheless demonstrate a sizable, ongoing, permanent impact of the economic livelihoods of thousands of Montanans that Hutterite activities ultimately support.

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