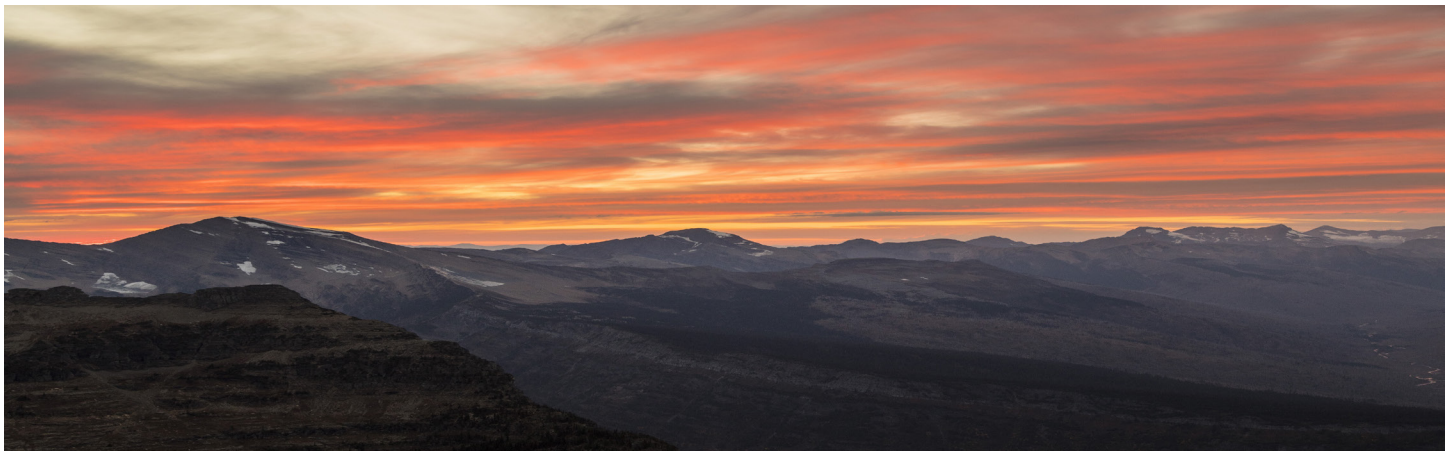
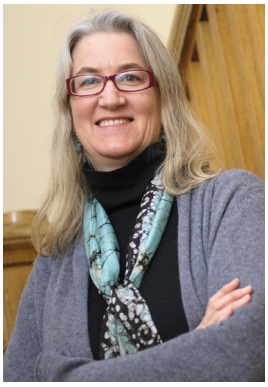
NEWSLETTER • FALL 2018

CAIRHE

CENTER FOR AMERICAN INDIAN AND RURAL HEALTH EQUITY



WANTED: TOOLS FOR RESEARCH AND CAREER SUCCESS



Alex Adams

As many of you know, I came to MSU from the University of Wisconsin School of Medicine and Public Health. The School had a Clinical and Translational Science Award (CTSA), an NIH program that supports translational health research in medical schools across the country. My former center, the Collaborative Center for Health Equity, was nested under that CTSA, and we took advantage of the many CTSA resources that can be invaluable to researchers.

In Montana, we have access to many of those same resources through the CTSA of the University of Washington, known as the **Institute of Translational Health Sciences** (ITHS). ITHS is one of 64 CTSA hubs nationwide working to change how biomedical research and training are performed. To date, it's served more than 6,500 investigators across the WWAMI region (Washington, Wyoming, Alaska, Montana, and Idaho).

Resources that ITHS can provide include access to informatics tools such as REDCap. REDCap is a free Web-based application used to build and manage online surveys and databases; we've used it extensively at CAIRHE. Other services include Data QUEST, an electronic health record data-sharing network offering researchers access to primary care research data sets. In addition, ITHS offers research services such as preclinical consulting, clinical trials consulting, and bioethics consulting.

Other really important resources are two regional clinical research networks. The WWAMI Region Practice and Research Network is a group of more than 60 primary care practices that offers investigators tools and connections for conducting collaborative research in primary care, community-based clinical settings across the WWAMI region. Meanwhile, the Northwest Participant and Clinical Interactions Network creates infrastructure for investigators wishing to collaborate with community-based clinicians across diverse inpatient and outpatient populations.

Yet another ITHS resource for faculty is its career development series, which consists of monthly lectures and workshops designed to provide early-stage investigators with tools, a forum for discussion, and learning opportunities to help them advance their careers. Topics covered include how to write an NIH K award; making the most of your mentor relationship; communicating your findings visually; and what *really* happens in an NIH study review. Faculty across the WWAMI region can access these workshops remotely as webinars.

It's easy to enroll in an ITHS membership, and many of the services are entirely free. I encourage everyone to check it out and become a member. In addition, CAIRHE, INBRE, and the AI/AN CTRP are working to build our own local resources for translational health research. With the many resources available, investigators should be able to access most of what they need for successful research projects that will benefit our communities.

Alexandra Adams, M.D., Ph.D.
Director and Principal Investigator

THORSENS CONTINUE STUDY OF FEDERALLY QUALIFIED HEALTH CENTERS

By Anne Cantrell
MSU News Service

A pair of Montana State University and CAIRHE researchers who examine how variations across federally qualified health centers impact efficiency and patient health outcomes—and who are simultaneously working to develop models to better understand the strengths and challenges facing Montana's health care system—are using a second year of CAIRHE pilot project funding to continue their work.

Maggie Thorsen, Ph.D., assistant professor in the Department of Sociology and Anthropology, and **Andreas Thorsen,** Ph.D., assistant professor of management in the Jake Jabs College of Business and Entrepreneurship, focus particularly on pregnancy-related health outcomes and disparities, such as prenatal health and birth outcomes. Their project is one of three CAIRHE pilot projects funded during 2018-19.

"We very much appreciate all of the support we've received," said Maggie Thorsen. "We're hopeful that our work trying to understand how to improve the system in Montana could improve the health of women and infants in Montana and ultimately their health later in life."

A paper focusing on part of the Thorsens' research, "Measuring efficiency of community health centers: A multi-model approach considering quality of care and heterogeneous operating environments," was published recently in *Health Care Management Science*. Other co-authors on the paper were Ronald G. McGarvey and Rohith Madhi Reddy, both from the University of Missouri.

Across the United States, more than 1,300 federally qualified health centers—or FQHCs—deliver comprehensive health services to approximately 24 million Americans, mostly individuals who are medically underserved and uninsured. The centers aim to address widespread health disparities in rural and urban areas.

CRITICAL IMPORTANCE FOR HEALTH EQUITY

Across the United States, more than 1,300 federally qualified health centers—or FQHCs—deliver comprehensive health services to approximately 24 million Americans, mostly individuals who are medically underserved and uninsured. The centers—which receive funds from the U.S. Health Resources and Services Administration's Health Center Program to provide primary care services in underserved areas—aim to address widespread health disparities in rural and urban areas. And they have displayed some successes in terms of improved patient health outcomes, according to Maggie Thorsen. For example, they have been shown to improve pregnancy-related health outcomes, such as a lower infant mortality rate and a lower percentage of babies born at low birth weight, she said. They also are linked with greater access to prenatal care in the first trimester compared to communities not served by these centers.

Evidence of growing health inequalities in the United States underscores the critical importance of federally qualified health centers for improving health outcomes and equity, Maggie Thorsen noted. However, while the health centers generally target disadvantaged and underserved populations who are at a higher risk for poor health, there is considerable variation across these centers in terms of the populations they serve and the environments in which they are located. For example, a federally qualified health center serving low-income patients in rural Montana may face different challenges than a federally qualified health center in New York City.

Variations in the health centers may lead to variations in patient outcomes as well, according to Andreas Thorsen. That's why one of the goals of the Thorsens' pilot project is to understand differences among the centers in terms of efficiency, quality of care, and pregnancy-related health outcomes and disparities.

A second goal of the project is to conduct an analysis of pregnancy-related health care facilities located in Montana.

"Access to obstetric services in rural areas in Montana and across the nation is diminishing," Andreas Thorsen said. "This is a big issue, particularly in Montana."

He explained that their team is using methods from the field of operations research and a method called facility location modeling to understand more precisely what the system looks like now. Then they will use mathematical models to help inform resource allocation decisions that can improve the system and increase access. The researchers use data from a number of sources, including the U.S. Health Resources and Services Administration and the U.S. Census Bureau.

"We're looking at how we could reduce driving times for certain populations, for example," Andreas Thorsen said. "If we see an area of the state that's high-risk, we might consider expanding or adding facilities. Could we identify optimal places for those facilities?"

Alex Adams, M.D., Ph.D., director and principal investigator for CAIRHE, said the Center is excited to support the Thorsens' important research. Their pilot project will inform a larger research project, led by Andreas Thorsen as PI and Maggie Thorsen as co-investigator, that will be part of CAIRHE's next phase of NIH funding, to begin September 2019 (see page 5).

"I believe their work will make a significant contribution toward improving health equity for rural mothers and their infants," Adams said.

Maggie Thorsen said the current pilot project benefits from an innovative interdisciplinary approach—an approach that will continue in the scaled-up project.

"Problems are best addressed by thinking about multiple perspectives," she said. "Drawing on methods from different disciplinary perspectives is a real strength of this approach. The questions researchers from different disciplines ask and the things those researchers try to include in the models are going to be different. We each have our ideas we bring to the table to help us in developing these questions. … Together we've been able to come up with richer kinds of questions."

PLANS FOR THE FUTURE

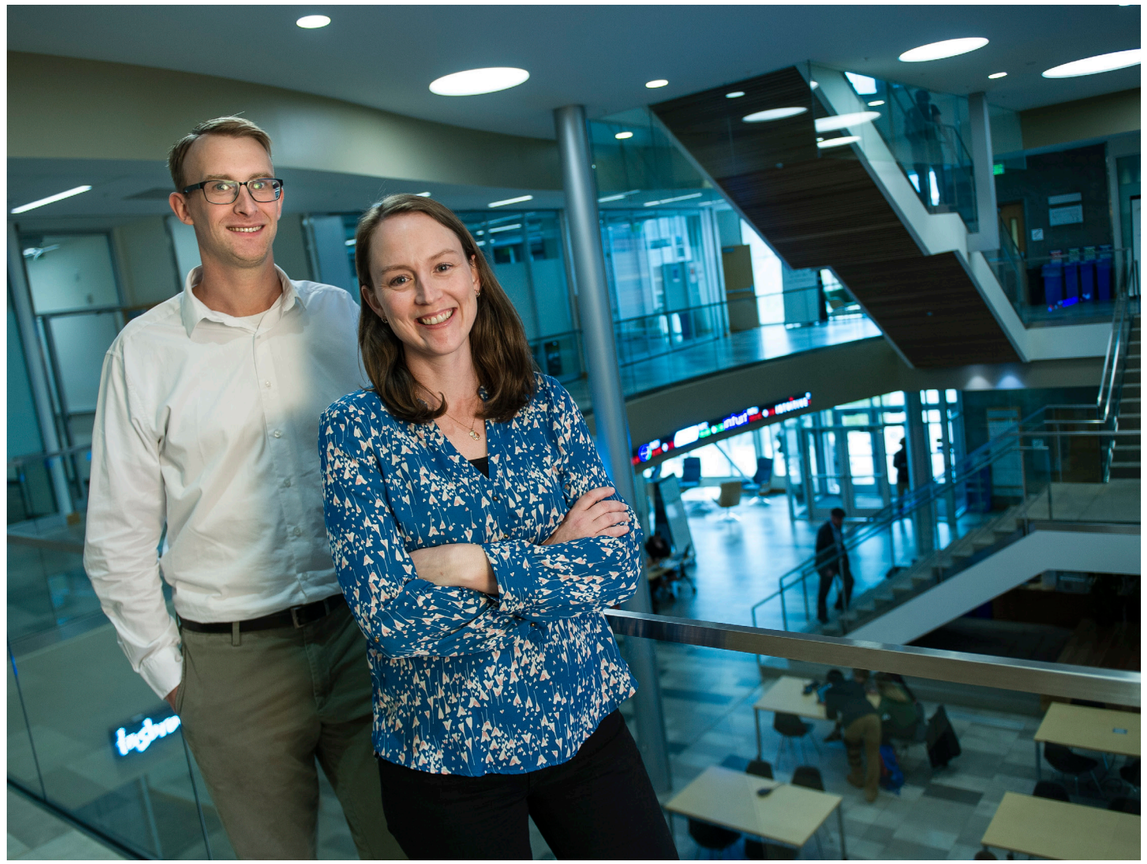
By improving understanding of how variation across federally qualified health centers impacts efficiency and patient health outcomes, as well as by developing models to better understand the strengths and challenges facing Montana's integrated health care system, the researchers hope to provide policy recommendations for improving health and reducing disparities in Montana, Andreas Thorsen said.

"Eventually, our aim is to develop an interactive mapping application so we could take results of our analyses and have a user-driven system where stakeholders could look at this, understand what's happening in their communities, and figure out how solutions could impact them," he said. "They could understand how to better increase access and improve health outcomes."

The hope is that a better understanding of the centers' unique challenges, as well as their outcomes, will ultimately help experts devise a system that improves patient outcomes, Maggie Thorsen said.

"If we can better understand factors that impact the health of our youngest members of society, then this has implications for their health across their life course as well as their outcomes in other domains," she said.

Photo by Kelly Gorham



Andreas Thorsen and Maggie Thorsen inside Jabs Hall, home to the Jake Jabs College of Business & Entrepreneurship.

RESEARCH

PROJECT HIGHLIGHTS

Here's just a sampling of what CAIRHE's faculty investigators have been up to during the summer and fall months.

Carmen Byker Shanks, Ph.D., RDN (The UnProcessed Pantry Project [UP3]: A Novel Approach to Improving Dietary Quality for Low-Income Adults Served by Rural Food Pantries), is currently collecting baseline data and fine-tuning the components of an intervention that facilitates the availability of unprocessed foods (or nutrient-dense foods that are low in added sugar, fat, salt, and additives) at two rural food pantries while promoting healthy diets to decrease health risks. UP3 (pronounced U-P-3), one of two new CAIRHE research projects beginning this fall (along with the project led by Dr. Monica Skewes, below), aims to improve dietary quality by influencing the food supply through organization-wide nutrition policies, modifying the food environment at food pantries with minimally processed foods and "nudges" toward healthier options, and changing participant dietary intake through nutrition education.

Monica Skewes, Ph.D. (Development and Pilot Test of Indigenist Relapse Prevention for American Indians), completed data collection over the summer for her team's survey of 200 American Indian people with substance use disorder on the Fort Peck Reservation. Her team also worked on analyzing qualitative data from an earlier phase of the project and wrote papers, with one already accepted for a special issue of *American Psychologist* focused on racial trauma and healing. A medical student in the WWAMI program, **Rachael Cornelius,** did some preliminary data analyses and presented a poster based on the findings. Currently the project team is convening focus groups at Fort Peck to learn from diverse groups of people how they think about relapse prevention.

"We'll use the focus group data to inform the cultural adaptation of our Indigenist Relapse Prevention program so that it's culturally appropriate and fits the needs of the community," Skewes said. Looking ahead, the project will refine its treatment manual and intervention procedures next spring, followed by the training of local lay health providers—who will implement the intervention—by **Art Blume,** Ph.D. The pilot test of the intervention will begin next fall.

Over the summer, **Kelly Knight,** Ph.D., and **Colter Ellis,** Ph.D. (Responding to Secondary Trauma ...), conducted focus groups and evaluation of their trainings on secondary trauma in the workplace held in May and June in Bozeman and Browning. In August they completed a draft of an intervention training manual for secondary trauma and piloted their Secondary Trauma Survey with their Community Advisory Board (CAB). Earlier this fall they hosted informal conversations about Somatic Experiencing with knowledgeable First Nations and American Indian therapists and service providers.

More recently, they piloted their Secondary Trauma Survey with local providers, completed data analysis, and began survey data collection. Their paper "Advancing a Model of Secondary Trauma: Consequences for Victim Service Providers" was published recently in the *Journal of Interpersonal Violence*.

Neha John-Henderson, Ph.D. (A Study of Trauma, Daily Stress, Sleep, and Blood Pressure in American Indian Adults), worked with Blackfeet Community College students during the summer on developing and conducting a research study examining the potential for hiking to sacred places in the community to reduce biomarkers of stress and levels of depressive symptoms and anxiety. The students also collected actigraphy data to examine whether the hikes would positively affect wake-sleep cycles.

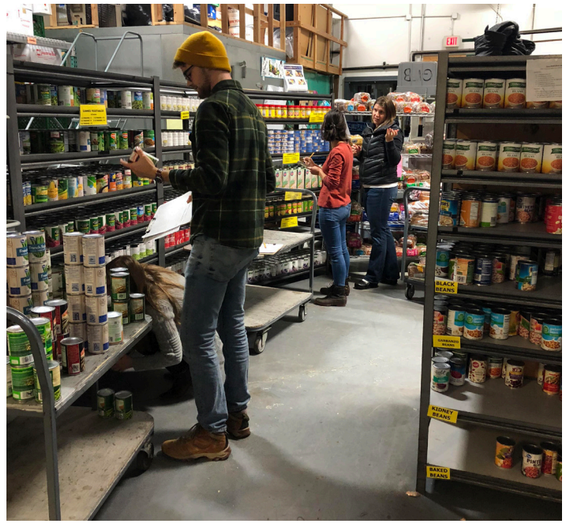


Photo by Carmen Byker Shanks

Members of the UP3 team (Carmen Byker Shanks, PI) gather baseline data about the food supply in rural food banks to help understand the availability of unprocessed foods and measure change as a result of the multilevel intervention.

John-Henderson was featured prominently in a June article in *Rural Health Quarterly*, "Montana Tribe Tackles Health Disparities with Help from Student Researchers." In it, she said, "While it's impossible to change the past, there's always the possibility to make changes in the current environment to bring about positive outcomes. That potential is what drives my research." Her pilot research with CAIRHE is currently in its second year.

Maggie Thorsen, Ph.D., and **Andreas Thorsen,** Ph.D. (Multi-Criteria Evaluation of Efficiency, Access, and Outcomes at Health Centers), have been busy with dissemination in addition to other project activity (see article on page 2). In April, Maggie Thorsen presented a poster on CAIRHE-related work at the Population Association of America Annual Meeting. In November, Andreas Thorsen gave an invited presentation at the Institute for Operations Research and Management Sciences Annual Meeting in a session called "Evaluating Efficiency in the Public Sector." They are also working on three manuscripts related to their CAIRHE research, with one of those currently in second-round review at a health journal.

The Thorsens continue to hold biweekly research meetings with their three newly hired research assistants—undergraduate students in Sociology, Business, and Industrial Engineering.

CENTER NEWS

CAIRHE SUBMITS NIH COBRE RENEWAL APPLICATION; NOW THE WAITING BEGINS

On September 25, CAIRHE submitted its Phase II application for a Centers of Biomedical Research Excellence (COBRE) grant from the National Institute of General Medical Sciences of the National Institutes of Health. The resulting five-year grant, if awarded, would cover the years 2019-24, as reported in the Spring 2018 Newsletter.

Preparation of the large application occupied the better part of nine months for Center faculty and staff. Now the waiting game begins. Although the application has been referred to an NIH Study Section for review, it will likely be May before the Center knows the funding decision for certain.

"While we don't take anything for granted, we are confident in our application and know we put forward our very best work," said CAIRHE Director **Alex Adams.** "It's our job now to get on with our important work and be ready for the NIH decision when it comes."

In addition to application components for the Center overall, CAIRHE submitted plans for the Administrative Core, the Montana IDeA Community Engagement Core, and the new Translational Biomarkers Core (see article on page 6). The three research projects to be funded at the beginning of COBRE Phase II will be led by **Monica Skewes,** Ph.D., **Carmen Byker Shanks,** Ph.D., and **Andreas Thorsen,** Ph.D.

Adams is quick to point out the team effort that was required to assemble a competitive application. "We're all glad to be able to move on and focus on other things now," she said. "But we can also be proud of how so many individuals came together to produce a really outstanding effort. It frames for our NIH reviewers how much great work CAIRHE has done to date and what significant plans we have for the future."

CENTER CO-SPONSORS WEBINAR ON ACCESSING MONTANA HEALTH DATA

On November 14 CAIRHE co-sponsored a webinar, "The Path to Accessing Health Data in Montana," with its close NIH Institutional Development Award (IDeA) partners, Montana INBRE and the American Indian/Alaska Native Clinical and Translational Research Program.

The one-hour event, organized and hosted by **Susan Higgins** of the shared Montana IDeA Community Engagement Core, featured presentations by Heather Zimmerman, MPH, an epidemiologist with the Montana Department of Public Health and Human Services, and Helen Tesfai, MPH, an epidemiologist with the Rocky Mountain Tribal Epidemiological Center. The session focused on the details of health data collection, access, opportunities, and areas of concern for researchers and communities. More than 40 people around the state participated.

A recording of the one-hour webinar is available online on CAIRHE's website.

"This was the first in what we hope will become a series of useful short webinars for health researchers and Montana communities on a variety of health-related topics," Higgins said.

Topics for future events may include presentations on data management, community-based participatory research, statistical analysis, rural health issues, Institutional Review Board requirements, and Community Advisory Board design, she explained.

"We encourage people to offer ideas," Higgins added, "and we'll find the right speakers." Email her at susan.higgins@montana.edu.

CAIRHE TO HOST "BRIDGING THE GAP" WORKSHOP DEDICATED TO NIH SUCCESS

Earlier this fall, CAIRHE was tapped by the National Institutes of Health to design and host a new pilot program designed to mentor junior investigators from around the country toward successful submissions of NIH R01 and R21 grants involving American Indian/Alaska Native populations.

The workshop, titled "Bridging the Gap: From Application to Funding," will be held on the Montana State University campus on February 7-8, 2019.

"This is a huge honor for CAIRHE and a great chance for us to shine before a national audience," said CAIRHE Director **Alex Adams.** "It's also a very important event in and of itself that could have a lasting impact on research with Native communities in the next five years."

In cooperation with program officers from the National Cancer Institute, the National Institute on Drug Abuse, and the National Institute of General Medical Sciences, CAIRHE will assemble up to 10 faculty investigators from across the country with recently scored but unfunded R01 and R21 proposals, as well as five senior mentors with a history of major NIH funding for research with Native communities. The mentors from across the country accepted the opportunity right away, Adams said.

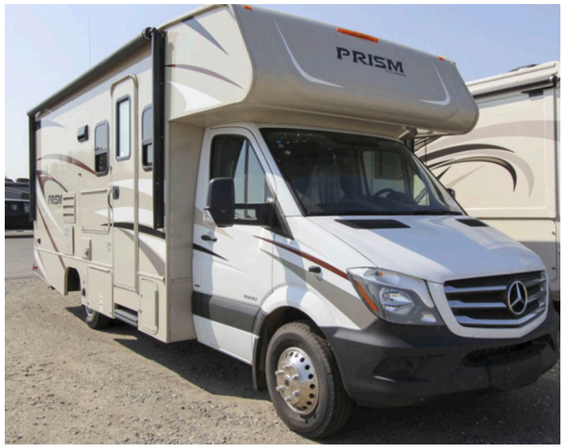
Following two days of presentations and one-on-one guidance, the mentoring relationships established at the workshop will continue next spring to help the investigators prepare their resubmissions for the R01/R21 funding opportunity "Research to Improve Native American Health."

CAIRHE will issue invitations to participants by early December, after which the Center will help with travel arrangements—paid for by NIH—and develop the workshop's program. Some of the presentations will be open to CAIRHE investigators, Adams said. "In addition, we hope that some of our own faculty with NIH success, such as **Suzanne Held** and **Beth Rink,** will be able to share their insights to this group," she added.

NEW MOBILE LAB BRINGS HEALTH EQUITY RESEARCH WHERE IT'S MOST NEEDED

CAIRHE will soon be rolling out its research to communities around the state—*literally*.

This winter the Center will unveil its new Community Engagement and Research Mobile Lab, a customized 25-foot RV designed for research and educational outreach in Montana's frontier communities. CAIRHE will share the Mobile Lab's operation with Montana INBRE, and it will benefit investigators in both programs, as well as other MSU faculty over time. Its purchase and retrofitting for research were made possible by an NIH investment through CAIRHE's grant earlier this year.



The Community Engagement and Research Mobile Lab (aka the Health Education and Research Bus, or HERB) is a Coachmen Prism 2200 RV that looked like this off the lot. CAIRHE is currently transforming its exterior and interior for its new mission.

"We've spent more than a year deliberating how to implement this facility the right way," said CAIRHE Program Coordinator **James Burroughs.** "It has to be respectful of communities, and we want to be sure it's looked upon as an asset for community health and education, not simply a way to collect data."

The Mobile Lab will represent a significant advance in the operations of the Montana IDeA Community Engagement Core, which will oversee its use, and will provide an increase in community health research capacity for the Center and the entire university, said the Core's **Susan Higgins,** M.S. The Lab's interior has space for interviews and small focus groups; clinical space and a custom exam table for biological specimen collection, such as blood draws; and cold storage for transport of biological specimens back to MSU. Other areas on board store health education information that can be displayed at health fairs and other public events where the vehicle may visit.

Higgins and **Erik Adams,** M.D., Ph.D., director of the Lab, will oversee its scheduling and use by MSU faculty.

Although it has taken longer than expected to equip the RV interior and resolve some electrical problems on board, CAIRHE plans to have the vehicle ready for use in rural and frontier Montana once the worst of Montana's winter weather has subsided, Higgins said.

Rather than using its stodgy official name, the vehicle will be known to the general public as the Health Education and Research Bus, or HERB. It is currently being "wrapped" with beautiful panoramic photographs of Montana landscapes, and CAIRHE and INBRE insignia can be placed temporarily on the vehicle exterior as needed, depending on the use at the time.

"Already a lot of our faculty are eager to use it," Higgins said. "We hope that HERB will be an ambassador for our programs—out on the highways and in communities around the state."

TRANSLATIONAL BIOMARKERS CORE LAB ESTABLISHED, BEGINS OPERATIONS

This fall CAIRHE is adding a new laboratory component to its health equity mission, the result of a major new investment from the National Institutes of Health.

In May the Center received NIH approval for nearly $400,000 in spending on equipment and staffing to launch the upgraded facility, known as the Translational Biomarkers Core. An outgrowth of the MSU Food and Health Lab, established by support from Montana INBRE and directed by **Selena Ahmed,** Ph.D., and **Carmen Byker Shanks,** Ph.D., the new Core Lab will occupy space in MSU's new Health Sciences Building, home to CAIRHE, and will represent a significant advance in the biomarker analysis capabilities of MSU as a whole.

The Core was one major part of CAIRHE's COBRE Phase II renewal application submitted in September.

Ahmed serves as Core director, while Byker Shanks will be a primary user of the Core Lab as a Center research project leader. Both remain co-leaders of the Food and Health Lab, which occupies separate but contiguous space in the building.

The Core will soon welcome a new Ph.D.-level Laboratory Manager and a three-quarter-time Research Technician. Those individuals, currently in the final stages of hiring, will be announced soon.

"We're so excited about all of the recent developments with this Core," Ahmed said. "Together they will allow for the sustainable development of critical research services that expand the depth of COBRE-funded projects and address an important need for COBRE investigators." That need, she explained, is to add biomarker assessment as another tool to go with self-reported and qualitative measures in clinical intervention trials and future R01-level proposals led by Center faculty.

The Core adopts a broad definition of *biomarkers* as indicators of a biological state that provide a standardized, valid, and precise way of evaluating exposure, effect, or susceptibility of humans to specific interventions or social and environmental factors that impact human health, Ahmed said. These diet, lifestyle, and chronic disease biomarkers include assessments of inflammation, oxidative stress, hormones, metabolic disease, growth factors, kidney toxicity, and drug and alcohol use.

The aims of the Core are to provide and maintain state-of-the-art instrumentation, provide lab analytical services for conducting biomarker assessments, and provide research consultation and training to investigators. Major instruments maintained in the Lab include a multiplex immunoassay analyzer, dual high- and ultra-performance liquid chromatography module, flow cytometer, spectrophotometer, fluorometer, and real-time PCR unit.

Through a combination of COBRE and institutional support, CAIRHE will provide Core services to its investigators at no charge, which is especially beneficial to junior investigators with limited research budgets who are just beginning to use the capabilities of this Core, Ahmed said. This no-fee policy for CAIRHE investigators will continue throughout COBRE Phase II (2019-24). Other users of the Core will pay modest user fees to offset some of the facility's operational cost, with a 50% discount granted to investigators supported by Montana INBRE and the American Indian/Alaska Native Clinical and Translational Research Program.

For more information on the Core and its services, contact Core Director Selena Ahmed at selena.ahmed@montana.edu.

CAIRHE REQUESTS PROPOSALS FOR PILOT PROJECTS FOR 2019-20 FUNDING YEAR

CAIRHE has issued its annual request for proposals for one-year pilot projects from MSU faculty engaged in public health research. Proposals should be consistent with CAIRHE's mission of reducing health disparities in Native and/or rural communities, and they should have a high likelihood of leading to independent funding from external (non-MSU) sponsors.

FOR HEALTHY COMMUNITIES UNDER THE BIG SKY

The deadline for a letter of intent is February 1, 2019, with an application deadline of April 1.

"CAIRHE is a multidisciplinary center, so we're reaching out to faculty in departments across campus," said **James Burroughs,** CAIRHE program coordinator. "Being part of our center offers investigators a wealth of resources to help them on their paths toward becoming independent investigators."

Burroughs said he welcomes inquiries from faculty interested in setting up a no-obligation meeting to discuss the Center and this funding opportunity.

For complete details and instructions, visit www.montana.edu/cairhe/rfp.

GENEVIEVE COX JOINS RINK R01 PROJECT AS RESEARCH PROGRAM MANAGER

Genevieve Cox, Ph.D., has joined CAIRHE as Research Program Manager for Dr. **Elizabeth Rink**'s project *"We Are Here Now": A Multi-Level, Multi-Component Sexual and Reproductive Health Intervention for American Indian Youth*. Rink was awarded an NIH R01 grant in March to pursue the project that builds on several years of CAIRHE-funded research (see Spring 2018 Newsletter).

CAIRHE partly administers the project under the management of Cox and Grants Management Specialist **Maya Bronston.**

This fall, Rink and Cox are working to implement the sexual and reproductive health intervention for American Indian youth on the Fort Peck Indian Reservation in northeastern Montana. The work addresses a major gap in sexual and reproductive health intervention studies with American Indian communities, Cox said, by integrating individual behaviors, family systems, and traditional Native beliefs, values, and practices with contemporary educational, health care, and social structures.

Genevieve Cox

"Sexual and reproductive health is such an intimate and integral part of our lives," she said. "I feel incredibly honored to be working in partnership with the Fort Peck Tribes and MSU on community-based work that addresses disparities in sexual and reproductive health care in the lives of American Indian youth."

Cox received her Ph.D. in Sociology from the University of New Hampshire in 2012. Beginning in 2008 she held several posts in New England, including teaching and research positions at the University of New Hampshire and three years on the faculty at Southern Maine Community College in Portland. She relocated to Montana in September.

"Genevieve is a talented, accomplished new addition to CAIRHE," Rink said. "She brings with her a background in program evaluation and management, research in sociology, and a strong belief in social justice and equity. I'm delighted to have her as part of our team."

DONALD WARNE JOINS CAIRHE'S EXTERNAL ADVISORY COMMITTEE

CAIRHE welcomes **Donald Warne,** M.D., MPH, a nationally renowned expert in public health policy, health disparities, CBPR, and American Indian health, to its External Advisory Board effective September 1.

Donald Warne

Warne is director of the Indians Into Medicine program and associate dean of Diversity, Equity, and Inclusion at the University of North Dakota School of Medicine and Health Sciences. A member of the Oglala Lakota tribe from Pine Ridge, South Dakota, Warne also serves as the senior policy advisor to the Great Plains Tribal Chairmen's Health Board—among other appointments to federal government advisory panels in the area of public health.

"Dr. Warne's guidance will be essential to CAIRHE during its next phase, when we will be continuing and strengthening our partnerships with all seven tribal nations in Montana," said CAIRHE Director **Alex Adams.** "We're very fortunate to have his expertise and experience."

Warne will join two founding members of the CAIRHE EAC, Dr. **Dennis Donovan** and Dr. **Jack Westfall.** Dr. **Tassy Parker** recently stepped down from the EAC after serving since 2016.

CAIRHE PROFILE: MEGAN HIGGS, STATISTICAL CONSULTING & RESEARCH SERVICES

Name: Megan Higgs, Ph.D.
Home: Bozeman, Mont.
Position: Director, MSU Statistical Consulting and Research Services (SCRS). Dr. Higgs and her SCRS colleagues serve as statistical collaborators with CAIRHE faculty.

SCRS is four years old, and you've been associated with it from the beginning in various capacities, though only as director more recently. How is SCRS funded, and whom do you help?
The need for statistical collaboration at MSU existed long before SCRS. Statistics faculty members have a long history of advocating and submitting proposals for statistical research infrastructure on campus. The ideas finally gained traction with funding from Montana INBRE in 2014, providing the first formal support for graduate students and a national search for a Director of Statistical Consulting—thus creating something more formal called "scissors."

SCRS is now supported by four NIH Institutional Development Award programs, including INBRE and CAIRHE, and it relies heavily on an amazing team of Statistics graduate students supported by INBRE. Investigators associated with these programs are our priority, but we work to serve everyone we can if we have the bandwidth and funding resources are available. We have been operating under a waiting list of about 10 people and hope to hire another statistician soon. We continue to work on a longer-term funding model with the hope of continued growth of SCRS and sustainability in the distant future. Infrastructure like SCRS provides crucial support for researchers as MSU rises to the challenge of its research mission.

What kind of work does SCRS do?
The general mission of SCRS is to support and guide researchers in the use of statistical inference in their work, and to promote more mindful use of statistical inference in practice. I realize the term "statistical inference" is a mouthful, but it carries important additional meaning beyond "statistics." Contrary to popular belief, statisticians are far more than "number crunchers" and can contribute most when they're included early in the research process. For example, we can provide support when finalizing research questions and objectives and working to align them with a study design. Statistical inference is necessarily tied to the questions and the study design, with analysis and results depending on those crucial first steps in the research process. Statisticians are formally trained in design and evaluating what inferences are justified from a particular design. Think of us as research design therapists!

Another important role SCRS often takes on is providing initial graphical visualization of raw data in a way that is consistent with the design and facilitates the important step of exploratory analysis and assessment of assumptions before modeling. And we do, of course, provide assistance with analysis and interpretation of results—but our best work can only be done if we're involved early in the process.

You talk a lot about "statistics" vs. "Statistics." What's the difference?
Great question—you were obviously paying attention during my CAIRHE Roundtable presentations! Statistics with a big "S" is a scientific discipline concerned with making inferences from data using methods with probabilistic foundations; this encompasses many subdisciplines, design- and model-based inferences, as well as the philosophical considerations of making generalizations, predictions, and decisions from data. Contrary to popular belief, Statistics is *not* simply a list of statistical methods and a flow chart of how to choose the correct method for a given context. The simple summary numbers we calculate from data are statistics with a little "s." These numbers are easy to calculate and report without considering the design that generated the data and other aspects crucial to appropriate inferences.

Unfortunately, Statistics is indistinguishable from statistics in spoken language, and grammar chosen often matches that appropriate for statistics, even when people are really referring to something that's closer to Statistics. I believe science in general could benefit from increased awareness of Statistics beyond the statistics!

The current way statistical methods are used in practice is still relatively new to the scientific process. What do you like about current practice, and where do you think it can be improved?
This is a very difficult question for me to respond to briefly. It's the subject of a book I desperately want to find the time to write! The evolution of the scientific process in many disciplines to include statistical inference as an integral and expected part has positively benefited research and science in many ways. However, the automatic and bright-line focused use of statistical methods in practice has also had substantial negative consequences on science. This is not due to inherent faults in the process of statistical inference as developed in Statistics, but to the role it has taken on in practice that is simply not justified by its theoretical and philosophical foundations.

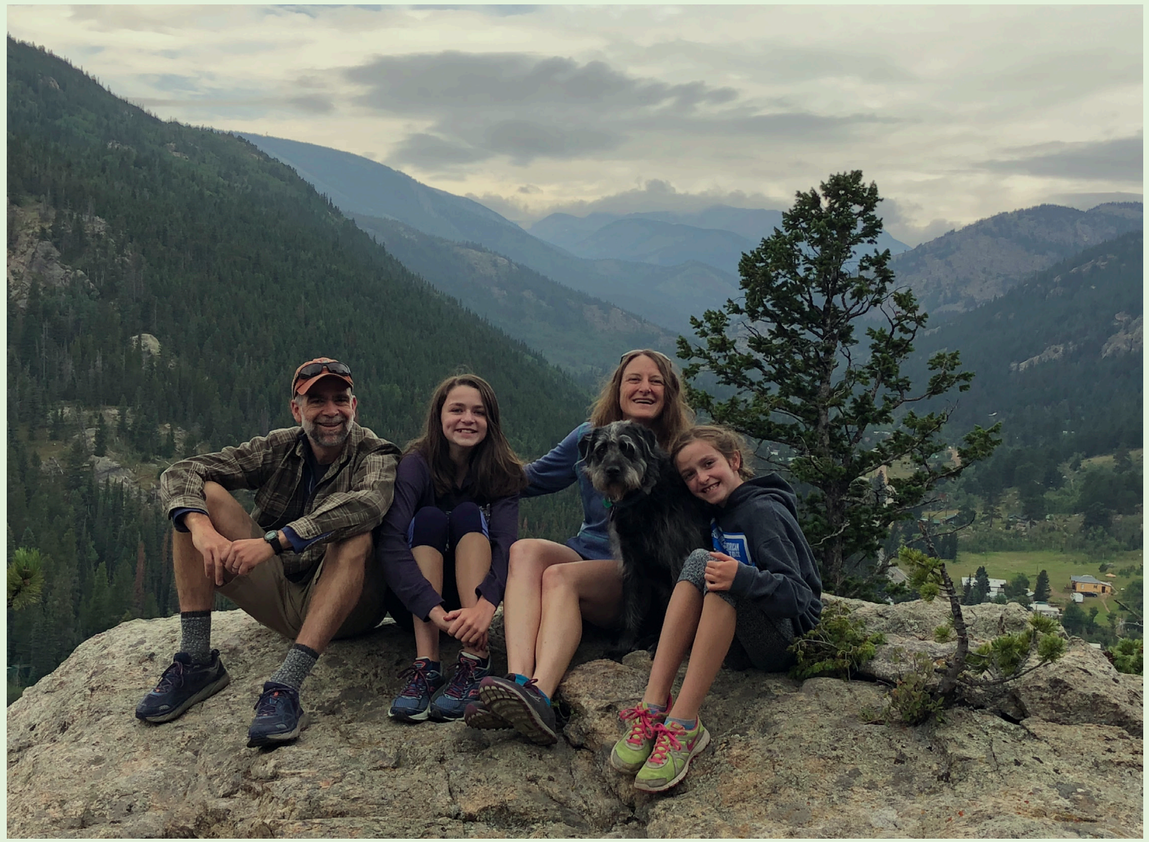
Science has placed an inordinate and undeserving amount of trust in statistical methods to deliver something they were not designed to deliver. Unfortunately, this has contributed to problems such as reproducibility of results from single studies, research ethics, and issues that have been identified with the current incentive system for researchers. However, we are now entering an exciting transition point in science. The digital era is creating a revolution in how research is shared and disseminated, with a refreshing push toward openness and transparency. I believe this revolution will provide the needed opportunity and motivation to shift current scientific practice related to statistical inference and empower researchers with the permission to tap into the additional creativity and insight that can be gleaned by decreasing reliance on statistical methods. I'm excited to help MSU researchers navigate this revolution.

How do you hope SCRS will start to change the way researchers at MSU use statistical inference in their work?
My hope is that we can promote more mindful use of statistical inference in science by raising awareness of the importance of taking time before data collection to carefully align research questions and objectives with the study design, and decreasing reliance on summary statistics in justification of results and conclusions. In general, I hope to raise awareness of the aspects of statistical inference that are left in the shadows next to the spotlight on modeling and analysis (the "number crunching"). This includes encouraging a shift from methods-focused work to question-focused work, and an empowering of researchers across disciplines to rely not only on statistical inference, but extra-statistical inference that can involve more creativity and theoretical foundations specific to a particular discipline.

Along those lines, how can faculty investigators change their own way of thinking about these concepts, and change when they start to incorporate them into their research, so that they are more effective tools for science?
Statistical methods and results are not magic. It's so tempting to take the numbers generated as trustworthy "answers" to incredibly difficult questions; but the numerical summaries we take as results are bought through reliance on assumptions and require a great deal of justification before becoming the foundation for valid conclusions. The most effective thing a researcher can do is put a great amount of effort in the design phase of research so that inferences and statistical methods can be justified by the design and not simply by assumptions added for convenience. The added time and effort in the beginning is well worth the gains in the rest of the research process. An analysis can easily be redone, but data cannot easily be re-collected! Let's embrace the pre–data collection aspects of Statistics.

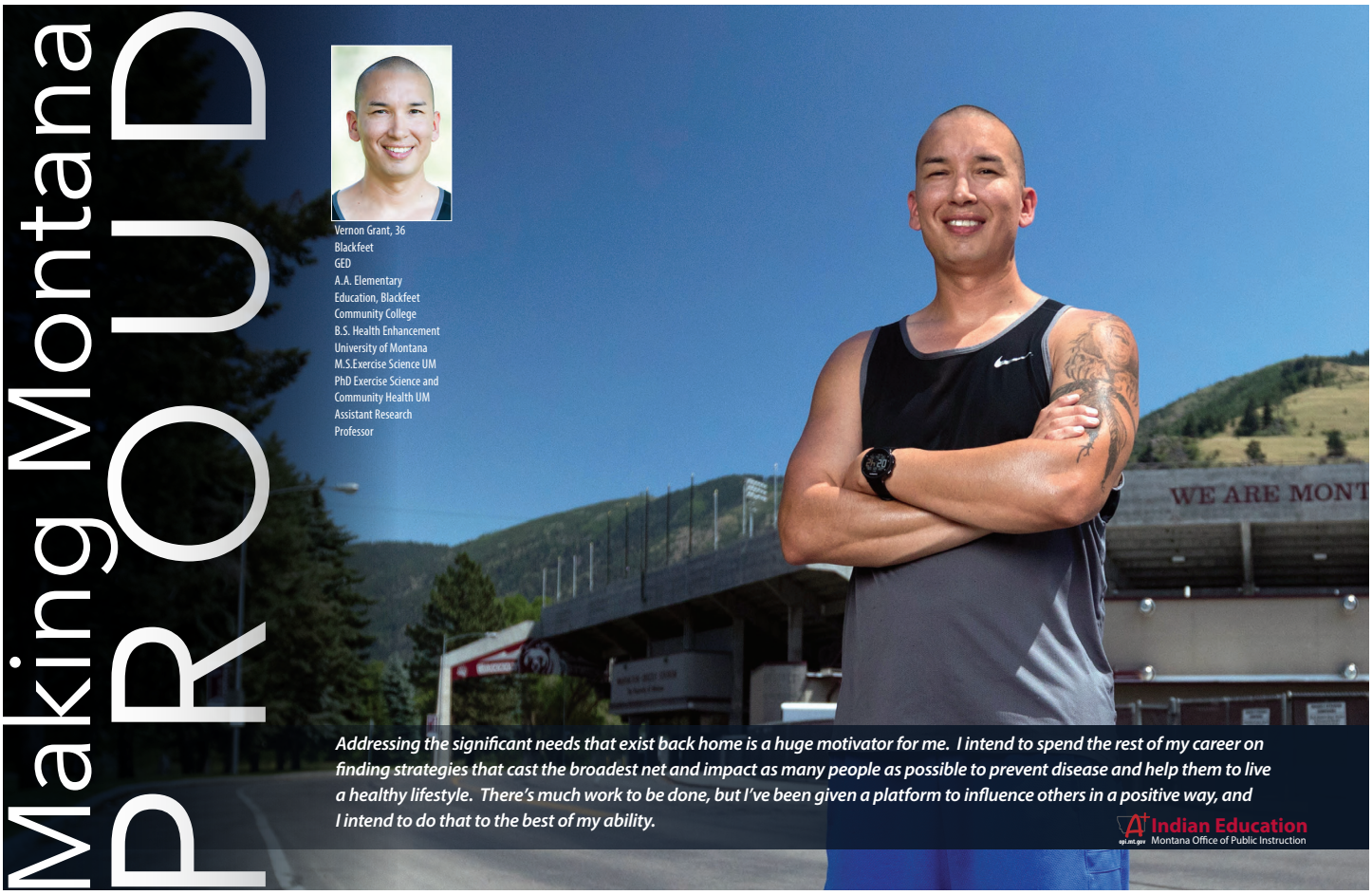
How do you like to spend your spare time?
I like to spend my spare time outside with my family and/or my dog (I know, very stereotypical Bozeman!). I love being out in the early mornings and have been running on Peets Hill since the early '90s, when it was still a single track trail and I rarely saw another person on it! Much of my non-work time is spent supporting my daughters (10 and 12 years old) in their endeavors, such as gymnastics and rock climbing. This also leads us on a lot of within-Montana travel to visit family in Kalispell, Helena, Clyde Park, and Fishtail. I also treasure bedtime reading and slowly making progress though the ever-growing stack of books balanced on my bedside table—mostly history and philosophy of science, with a little Barbara Kingsolver mixed in!

Photo courtesy of Megan Higgs



Megan Higgs with her husband, Steve; her daughters, Shaden *(left)* and Joryn; and her dog, Ginny.

PEOPLE



Montana Office of Public Instruction

In July, CAIRHE Assistant Research Professor **Vernon Grant,** Ph.D., was featured in the "Montana Proud" poster series produced by the Office of Public Instruction's Indian Education Division. The 14 posters in the series showcase young American Indians and tell their success stories. Posters were sent to every Montana middle and high school this fall.

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