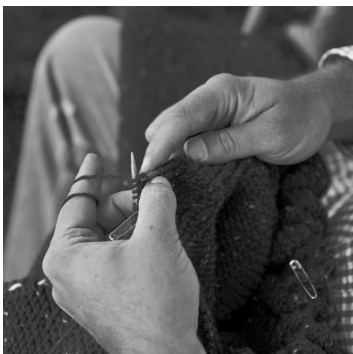
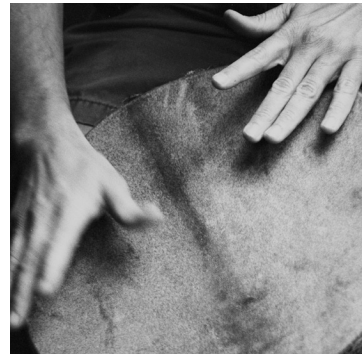


2017-2018

ANNUAL REPORT



**Center for
Health,
Work &
Environment**
colorado school of public health



COVER PHOTOS BY Daniel Thau Teitelbaum

NOTE *from the* DIRECTOR

LEE NEWMAN

When work changes, health changes. We are learning from you, our partners, how we can adjust what we teach, identify new research directions, and improve practice to be responsive to how work is shifting. From global climate to corporate climate, there are many evolving factors that influence how, when, where, and why we work. We are studying how these changes affect workers and applying forward-thinking solutions.

We are always questioning how we can reach more workers, faster, and with the best solutions out there. Workers are our “customers.” We focus on ways to positively affect their lives. Conducting rigorous research and spreading that knowledge to the scientific community, our industry and community partners, and workers themselves, is a central theme of the center.

In this report, we highlight some of what we are learning in the sugarcane fields of Guatemala in collaboration with a major sugar producer in Central America, Pantaleon. Over the past three years, we have partnered to improve the health, safety, and well-being of their workforce. For example, we discovered that making adjustments to the electrolyte solution that cane farmers drink reduces muscle damage and kidney injury. As I write this, I sit at the foot of Volcán de Fuego, where our joint team of researchers from the center and Pantaleon are gearing up to test the effectiveness of our recommendations on more than 5,000 field workers. We estimate that these changes will prevent thousands of people from developing kidney injury each year and will set a new international industry standard.

Here at home, we are providing leaders with the skills and tools they need to change the culture of health and safety in their businesses. Through our Health Links™ program and the CDC-funded Small + Safe + Well Study, business leaders learn how to improve and measure employee well-being and become champions

for a healthier, safer culture. Over the past five years, we have worked with more than 500 organizations to improve their health and safety outcomes.

We are also coming up with creative and effective ways to help employers address the burden of chronic diseases, such as cancer. Millions of Americans are diagnosed with cancer each year, and nearly three-quarters of workers facing cancer want to keep working. But both employers and employees struggle with how to accommodate their needs. We are designing a cancer-supportive workplace module of Health Links’ Healthy Workplace Assessment™ to help employers support cancer survivors.

As we grow, we are also expanding partnerships that help us multiply our impact. We have strengthened our relationships with the University of Colorado Cancer Center, Center for Global Health, Colorado Consortium for Prescription Drug Abuse Prevention, Colorado Consortium for Climate Change and Health, the Depression Center, and the Colorado Department of Public Health and Environment, among others.

We are here today because of the support we have received from organizations and individuals who share our vision of improving workplaces to benefit employees and enterprises. That is why I invite you to become a member of our center. Help us make our communities healthier and safer for all workers.

Visit ucdenver.edu/joinchwe to learn how you can get involved.

Warmly,

Lee Newman, MD, MA
Director, Center for Health, Work & Environment
Professor, Colorado School of Public Health

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3,597

professionals trained in health & safety



2018

~ 40 professionals

26%

increase over previous year



2017



99%
of all Mountain & Plains Education and Research Center*1 alumni are employed in occupational health & safety professions



4,134

unique visits to the center website homepage

47%

increase over previous year



563 followers



337 followers

5,243

unique visits to the Health Links™ website homepage

23%

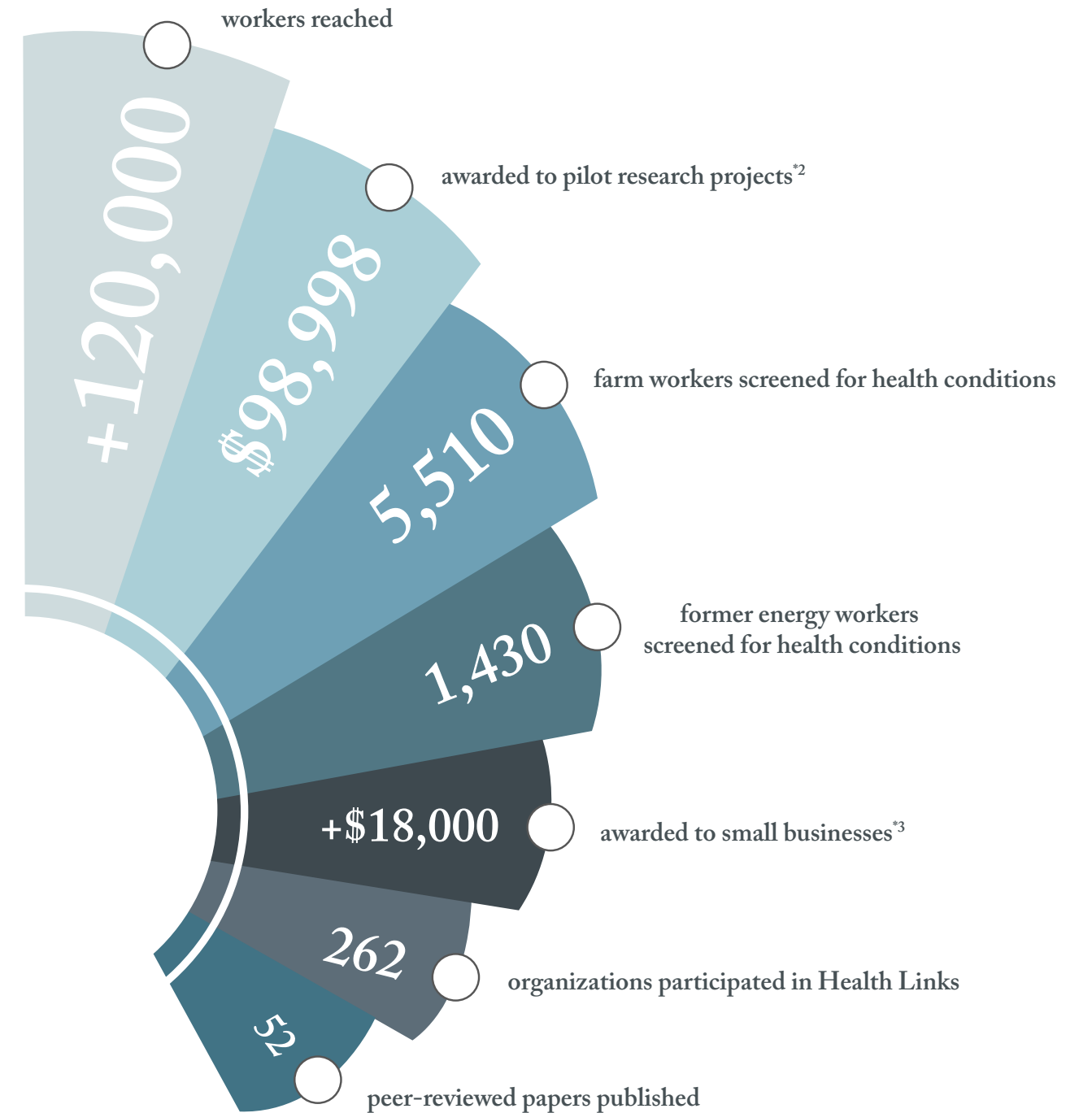
increase over previous year



764 followers



1,847 followers



*1 Funded by the National Institute for Occupational Safety and Health (NIOSH)

*2 This funding is made possible by NIOSH

*3 This funding was made possible by Eagle County Public Health and Environment through a grant program awarded by the State Health Department to support efforts to improve chronic disease in Economic Development Region 12.



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Starting with Colorado and now reaching more broadly, the Center for Health, Work & Environment is tackling some of the toughest challenges and finding solutions.

JONATHAN SAMET, MD, MS
Dean, Colorado School of Public Health

Addressing public health challenges at home & abroad

Rising global temperatures, opioid overdoses, and chronic diseases are some of the most serious threats to workers around the world. Worker health is interrelated with the sustainability of any business and health of every community. We are bringing our team's knowledge, research skills, and business savvy together in an effort to improve the lives of as many people as we can.

The power of partnership

A public-private partnership is making a difference in agriculture and public health

It is more than 95 degrees Fahrenheit and the sun is beating down on a team of workers in the sugarcane fields of Guatemala. Machetes in hand, they slash down stalk after stalk with precision and speed. Today, these workers will burn 50% more calories than a runner completing a marathon. But unlike someone who finishes a 26.2-mile run maybe a few times in a lifetime, this is just a typical Monday for these workers. They work six days a week for the entire six-month harvest season.

Cane cutting is tough work. Water, rest, and shade are the three main pillars of safe work in hot climates like Guatemala's, according to recommendations from the Occupational Safety and Health Administration. But based on our research, those factors are not the only key elements of healthy, safe work in the heat.

Since 2016, our team has been working with Pantaleon, one of the largest agribusinesses in Central America, to learn more about how to support the health of their workforce. The company reached out to us, looking for ways to improve their employee injury and wellness promotion programs. They had heard about our research collaboration with another agribusiness in the region and the Colorado School of Public Health Center for Global Health, as well as our Total Worker Health® approach. The first goal of our partnership with Pantaleon

was to identify the causes and to eliminate chronic kidney disease of unknown origin (CKDu), an issue that was gaining attention in the agriculture industry worldwide. Unlike kidney diseases that result from known causes such as diabetes, hypertension, and stones, the epidemic of CKDu is occurring in otherwise healthy, young working adults. While the causes are not well understood, CKDu does seem to be more common in hot parts of the world. As the climate changes, more outdoor workers could be at risk.

We wanted to know: As global temperatures rise, how can employers keep workers safe and promote health? It was important for Pan-

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**We have forged
a remarkable
multinational team.**

LEE NEWMAN, MD, MA
Director, Center for Health, Work & Environment

taleon, a company with a strong commitment to corporate social responsibility and sustainability, to understand whether it was on the right track. Protecting the workforce and addressing other health and safety challenges inherent in agricultural production are two key goals of this partnership.

“By partnering with Pantaleon, we have been able to meaningfully contribute to the health of sugarcane workers today, and also advance sci-

ence,” said center director Lee Newman, MD, MA. “We have forged a remarkable multinational team.”

We started by learning what the medical team at Pantaleon had already accomplished, observing cane workers in action, and conducting health screenings to identify employees with this condition. Then, we tested hypotheses about its potential cause. As we spent more time with workers in the fields and in the lab analyzing urine and blood samples, we found that improved hydration, rest, and shade were all important in reducing harm but were not enough to fully stop it. Many of the workers screened were well hydrated but needed more electrolytes to protect their muscles and kidneys. We recommended that Pantaleon conduct a pilot study to increase the amount of electrolyte solution being consumed by workers, a drink called “Suero.”

The pilot was so successful that in 2018 Pantaleon adopted this as standard practice for 5,000 field workers. We have been asked to audit the implementation of this large-scale program.

“We are rigorously investigating whether other risk factors — such as agrichemicals, metals, silica, pain medications, tobacco — may be contributing to the kidney problem,” said Lee. “Our unique partnership made it possible to obtain grant funding from the NIH to pursue additional research.”

This partnership has not only been beneficial to the company and their workforce, but has also advanced knowledge in the field of occupational health and safety. Our findings have been published in the

As global temperatures rise, how can employers keep workers safe and promote health?

Journal of Occupational and Environmental Medicine and PLOS One. This is one of the largest cohorts of workers to be included in a study of kidney dysfunction in sugarcane workers. While conducting research, we have been able to test real-time interventions to see what works best, not only in theory but also in practice in a large corporation.

Gaining a mix of practical experience and research insight has led to important contributions within the research community, including research on climate change. Our findings show that kidney function, hot weather, and productivity are linked. The implications of climate change could be much greater for human health and the global economy than previous research projected.

“If agricultural workers start the season with even mildly impaired kidney function, the exposure to high daily temperatures will hurt their productivity and may lead some workers to quit their jobs,” Lee said. “Think about it: as chronic health conditions increase among agricultural workers, and as the planet warms, we will find it harder and harder to feed the planet’s population.”

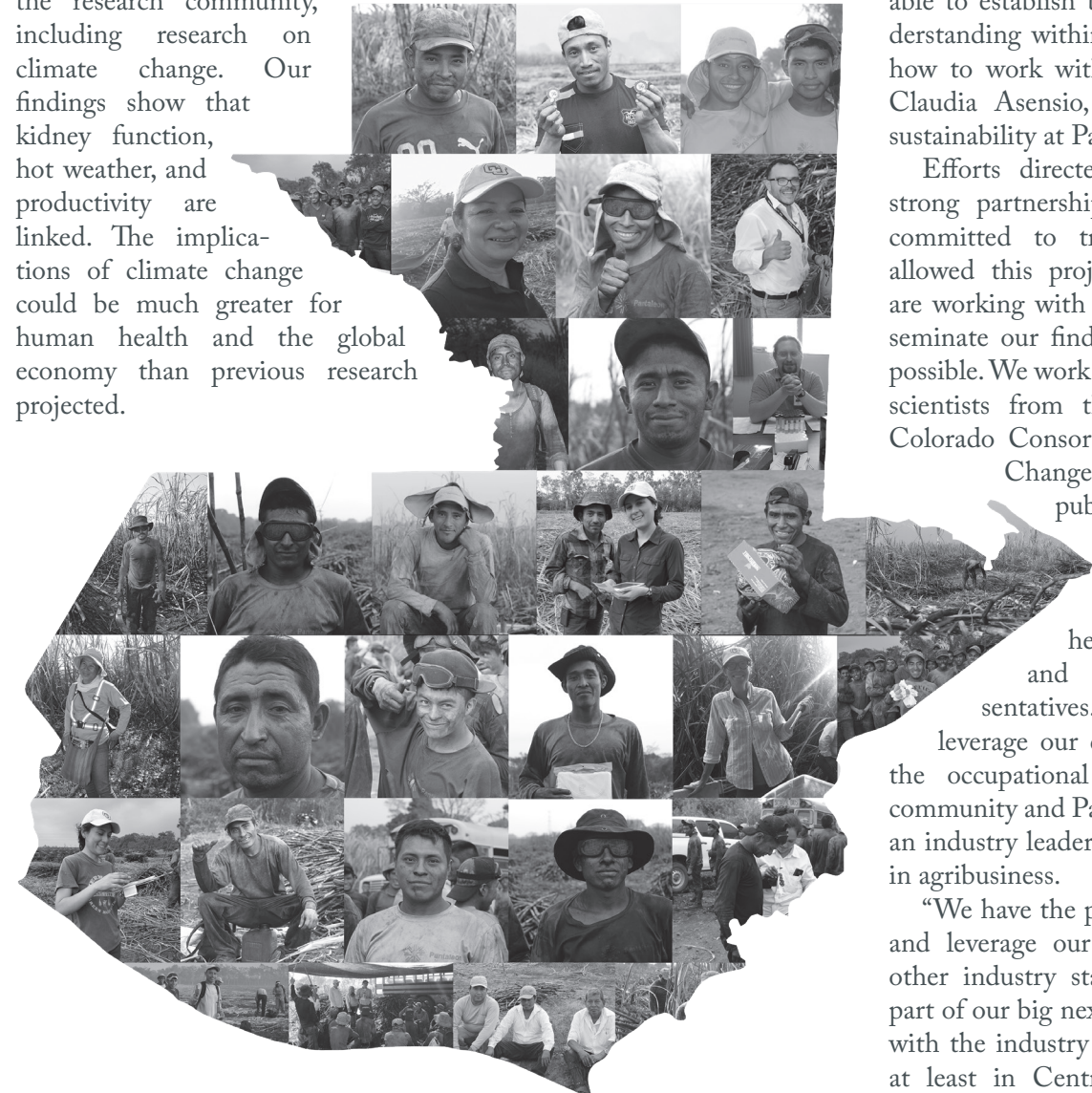
A public-private partnership like

this is unusual. Whether our team was observing workers in the field or meeting with company leaders, we needed to encourage buy-in from everyone involved to conduct sound research and have a measurable impact on the workforce. From the company’s perspective, it was important that we share results in a way that would help Pantaleon implement strategies proven to work.

“I think this partnership has worked so well because we’ve been able to establish trust. And an understanding within the company of how to work with academia,” said Claudia Asensio, DrPH, head of sustainability at Pantaleon.

Efforts directed to building a strong partnership and remaining committed to transparency have allowed this project to grow. We are working with Pantaleon to disseminate our findings as widely as possible. We work closely with other scientists from the University of Colorado Consortium for Climate Change and Health, publish research, and share our findings with scientists, public health professionals, and industry representatives. The goal is to leverage our center’s stature in the occupational health research community and Pantaleon’s status as an industry leader, to spark changes in agribusiness.

“We have the power to influence and leverage our knowledge with other industry stakeholders. That’s part of our big next goal — to share with the industry what we’ve done, at least in Central America, and adopt the best practices,” Claudia said.



Opioid stewardship

Our online continuing education course “[Guidelines and Tools for Improving Pain Management: Opioid Stewardship](#)” has reached more than 2,800 healthcare practitioners across the state of Colorado. This year, we revamped the content, design, and structure of the course in partnership with the Colorado Consortium for Prescription Drug Abuse Prevention and relaunched it in the summer of 2018. The new and improved version covers the latest state and federal guidelines for prescribing opioids and includes two new modules on specific patient populations: workers and pregnant women.

In this course, we offer providers our unique perspective as workplace health and safety experts. The course teaches healthcare professionals how to prevent opioid misuse and diversion — in their patients and their team. Participants learn how to help patients manage pain safely and return to work. The course applies to the entire care team, from the doctor who prescribes opioids to the pharmacist who fills the prescription.

We also developed educational modules designed for additional groups of providers and prescribers, such as veterinarians and dentists. Researchers from our team and an MPH student co-authored an editorial in the [American Journal of Public Health](#) that highlighted findings from a survey of 189 Colorado veterinarians about opioid misuse and diversion. Thirteen percent of respondents expressed concerns that a client had harmed an animal or made the animal appear unwell to receive opioids. Forty-four percent of respondents said they were aware of a client or a member of staff misusing opioids. This story was covered by local and national outlets, including the Denver Post and CNN. About a week after the editorial was published, the Food and Drug Administration (FDA) released a statement acknowledging the role veterinarians can play in combatting the opioid epidemic. The FDA also shared a list of recommendations and resources specifically for veterinarians.

We continue to work with local veterinary groups and the Colorado Consortium for Prescription Drug Abuse Prevention to expand and improve continuing education for veterinarians.

+200

providers trained this year

+2,800

practitioners trained since 2012

+15

media outlets covered our editorial on opioid diversion in veterinary practices

1.7
million

people diagnosed with cancer in 2018

90%

of participants in the opioid stewardship course say they are applying what they learned in their practice



Cancer-supportive workplaces

According to the [National Cancer Institute](#), roughly 1.7 million Americans were diagnosed with cancer in 2018. Many were of working age and either wanted to continue working or needed to in order to afford costly treatments. As treatments improve and the number of cancer survivors increases, so does the need for employers to accommodate employees as they undergo treatment and return to work. We are working with the University of Colorado Cancer Center to study how employers can better support workers with cancer and develop tools to help them do so effectively.

This year, we conducted focus groups with employers to understand how they support employees during and after cancer treatment. These findings were published in an editorial in the [Journal of the National Cancer Institute](#). While we gained valuable insights, we also discovered that additional research is needed on cancer survivors who engage in part-time or gig work while undergoing new treatments. Data are fairly limited on how employers accommodate employees dealing with cancer. The employers we surveyed said that they cared about their employees and wanted more education and training on the best ways to handle this sensitive workplace issue. There is a disconnect between the identified needs of cancer patients and what employers know about how to support them.

We are currently developing an online module that covers best practices for supporting employees who are battling, or have survived, cancer. This module will be available to organizations participating in Health Links™. It will focus on three main areas of workplace support: accommodations, benefits, and communication. Flexible work arrangements, health insurance benefits, and open communication about a worker’s ability to complete his or her job duties are some of the ways employers can support employees and achieve their organizational goals.



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Total Worker Health is a new approach that can take us beyond traditional occupational safety and health. I encourage my OSH colleagues to join me in the TWH certificate program. By refreshing and expanding our skills, we're preparing to partner with other TWH professionals to achieve our goal of eliminating workplace injuries and illnesses.

DEBORAH IMEL NELSON, PhD, CIH
Past president, American Industrial Hygiene Association
TWH Certificate student

Empowering teams & their leaders to drive change

Building a healthy culture takes conscious effort and engaged leadership. By setting a positive example, establishing norms for health and safety, and fostering policies that encourage worker well-being, leaders can improve the culture of an organization. That is why we coach organizational leaders, such as CEOs and supervisors, on how to become champions for health and safety. We empower them through trainings, continuing education, and Health Links™, a mentoring program for organizations.

Big change starts small, and at the top

How Total Worker Health® transformed one leader and her organization

About four years ago, Becky Hobart, CEO of Grand Junction-based Ariel Clinical Services, decided it was time for some major changes. Ariel's employee retention numbers were low. Becky had concerns, as did the board of directors, about this small but growing nonprofit organization's ability to stay competitive. Keeping well-trained, motivated staff was crucial to achieving Ariel's mission: helping children and adults in Colorado thrive.

When a colleague suggested that Becky start an employee health and safety program and join Health

Links™, our mentoring program for organizations, she recognized it as a "win-win" opportunity.

"I knew that our biggest resource and biggest asset as a nonprofit was our staff. The healthier our staff was, the better client care we could give. I knew that if we invested in our staff's health, that was going to be an investment in our clients' health, too," Becky recalled.

Applying the same ethos of care and support to staff as Ariel does to its clients was a no-brainer for Becky. Ariel hired a wellness coordinator, who started wellness initiatives such as physical activity

and health eating challenges. As a result, Becky and her team started to see the changes they were hoping for — in the organization's culture and in themselves. At the time the wellness program began, Becky was developing high blood pressure and high cholesterol. Now, her blood pressure and cholesterol levels are back in the normal range. Becky credits the wellness program and working with our center for her newfound commitment to her own health.

"It's really helped me incorporate healthy habits in my own personal life," she said. "I'm in a

Keeping well-trained, motivated staff was crucial to achieving Ariel's mission: helping children and adults in Colorado thrive.

health crisis right now, and part of my wellness journey is changing how I'm eating. I know 100% that I'm on the right path."

With Becky's buy-in at the very top, positive changes rippled throughout the organization. By summer, Ariel had completed the Health Links Healthy Workplace Assessment™, an evidence-based questionnaire that evaluates workplace health and safety. The organization scored very well and was recognized as a Certified Healthy Workplace Leader, the highest level of recognition.

But one area still had room for improvement: employee engagement.

The Assessment results were a call to action for Becky. Ariel started working more closely with our center for additional support. Ariel enrolled in our Small + Safe + Well Study to access more tools, including a health and safety culture survey for employees and a Total Worker Health (TWH) Leadership training. According to Becky, it was just a fluke that she attended the training; she had planned to send her wellness coordinator instead. But after that employee transitioned off the team, she decided to fill in.

It is a bit of serendipity she is very grateful for.

The training included in-person and virtual components that covered leadership and workplace health and safety best practices. During the day-long, in-person portion, Becky and other small business leaders discussed the strengths and weaknesses

of their organizations' approaches to health and safety and their personal leadership style. Participants set goals, outlined action steps, and shared lessons learned. In smaller organizations, responsibility for promoting TWH often falls squarely on these leaders' shoulders. Hearing from others who were facing similar challenges and learning about effective leadership tactics helped Becky and her peers feel more supported

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I knew that our biggest resource and biggest asset as a nonprofit was our staff.

BECKY HOBART
CEO, Ariel Clinical Services

and empowered.

She also learned how to measure the success of her efforts, through evaluation. As part of the training, participants reviewed the results of their organizations' Healthy Workplace Assessment and employee survey, comparing the results. To Becky's surprise, there were some gaps.

Ariel had scored well on safety metrics of the Assessment. But according to the employee survey results, staff did not always feel safe.

▼ Ariel Clinical Services, Certified Healthy Workplace™ Leader





*With buy-in at the very top,
positive changes rippled throughout the organization.*

Some were nervous about walking to their cars at the end of the day. The sun was setting earlier in the day and the automatic lights in the parking lot were not flicking on when it got dark. Some staff also felt stressed and uncomfortable when they had to visit a client's home in the evening or in an unfamiliar place.

Today, Ariel has a buddy system. Paired staff check in with each other to share their whereabouts and let someone know if they feel unsafe. To stay informed about other concerns, Becky now conducts listening tours to gather feedback. She talks to team members from each of Ariel's four locations to understand how she, and other leaders within the organization, can continue to support all aspects of employee well-being.

"It's been really transformational on a personal and organizational level,"

Becky said.

She is using the strategies she learned in the Total Worker Health Leadership training to advance health, safety, and Ariel's mission. Becky has used listening tours to get staff input on the organization's first strategic plan. She believes this has helped employees at every level feel heard and cared for.

Ariel's employee retention numbers are up. And for the first time Becky can remember, employees are saying that the culture is the reason they stay. Her pitch for making health and safety a priority at work is that it is an investment in people, which always pays off.

"I don't care what industry you're in. If you're not focusing on staff and investing in staff, you're not going to be competitive," she explained. "You can't lose with investing in your employees. They are going to do a better job if they are well."

Health Links™

Through our [Health Links](#) program, we mentor employers to become the health and safety champions that their teams deserve. The program offers access to an evidence-based Assessment, personalized advising, and Healthy Workplace Certification™. In just five years, we have reached more than 500 organizations in Colorado, Oregon, and Florida. Building on that success, Health Links has expanded nationally to help organizations across the country achieve Total Worker Health (TWH).

While Health Links has broadened its geographic reach, it has also expanded its options to meet the needs of all organizations, regardless of their budget, size, or goals. Three plans that include access to the online Assessment, a range of advising sessions, and a variety of evidence-based tools are available to participating organizations. These organizations are now also connected with research and public health experts based right here in our center.

We are developing additional modules of the Healthy Workplace Assessment™ that will allow organizations to explore areas such as behavioral health, outdoor recreation, and how to support employees with cancer.

Total Worker Health® Certificate

Nine students from diverse educational and professional backgrounds are working towards a [TWH Certificate](#) at the ColoradoSPH, the first program of its kind in the country. Whether they come from a background in industrial hygiene, nursing, or human resources, these students are eager to learn more about how they can apply TWH in various workplace settings. Students learn communications skills, key concepts of environmental and occupational health, and how to apply scientific knowledge in a practical way at work. In this 15-credit-hour program, students gain the skills they need to be champions for all aspects of worker health and safety and to lead change in their organization or community. Currently, the required coursework is offered in-person on the CU Anschutz Medical Campus. Starting in 2019, the certificate will be offered fully online to make the program more accessible to all learners continuing their education. The first student to graduate from the program received her certificate at the end of 2018.

262

organizations participated

1,493

professionals trained

13,300

workers reached

4,575

employees reached

58

organizations enrolled

15

leaders trained

1st

program of its kind in the country

9

students in the program

4

new students enrolled in fall of 2018

Small + Safe + Well Study

We have recruited 58 small organizations in Colorado, representing more than 4,500 employees, to participate in the [Small+Safe+Well \(SSWell\) Study](#) over the past two years. This study investigates how small businesses support the health and safety of their teams and the role that organizational culture can play. Employers that participate in SSWell take the Health Links™ Healthy Workplace Assessment, receive advising, and conduct an employee survey to see how staff perceptions of the organization's culture align with the Assessment score.

As part of this research, we developed a TWH Leadership training, funded and supported in part by Pinnacle Assurance. This first-of-its-kind training educates owners, supervisors, and others in influential positions in small businesses how to apply their leadership skills in a way that encourages health, safety, and well-being. Feedback from the first in-person training was overwhelmingly positive. All participants reported that they planned to apply what they learned in their jobs, and most attendees said the course significantly increased their understanding of TWH. We plan to replicate this model in the future to help leaders in organizations, small, medium, or large, become TWH leaders. Initial findings of the SSWell study have been published in [Occupational Health Science](#) and the [International Journal of Environmental Research and Public Health](#).



“

Colorado's Center for Health, Work & Environment really raises the bar for the field of Total Worker Health®. Through their keen understanding of the needs of business, large and small, and their inspired research and practice interventions, they improve the health of workers in Colorado and around the globe. NIOSH recognizes their strong efforts in advancing integrated approaches to protecting and promoting the health of workers on and off the job, and their pioneering work in training future generations of TWH professionals.”

L. CASEY CHOSEWOOD, MD, MPH
Director, Office for Total Worker Health®,
National Institute for Occupational Safety and Health (NIOSH)

Furthering & sharing knowledge

The future of occupational health and safety depends on advancing knowledge and sharing it. We conduct quality research to bring new knowledge into practice in ways that reach workers as quickly as possible. Our team presents at national and international conferences, hosts events and trainings, and supports innovative research through partnerships and funding. This year, we gave 36 presentations at eight conferences and published more than 50 peer-reviewed studies. As part of our commitment to furthering lifelong learning, we attend events not only to share what we have discovered but also to learn from other experts. We benefit from partnerships with other thought leaders in industry, academia, and workplace health and safety.

International Total Worker Health® Symposium

The 2nd International Total Worker Health (TWH) Symposium was held in May of 2018 in Bethesda, Maryland. We joined more than 380 investigators and public health practitioners from 15 countries to share research and make connections with one another. Our staff and trainees gave 14 presentations on topics such as family-friendly workplace strategies, TWH leadership in small organizations, and the continuing education needs of TWH professionals. Learning from and connecting with other experts in TWH led to stronger partnerships and new ideas for scientific inquiry.

Workers' Compensation Institute Educational Conference

We partnered with five other National Institute for Occupational Safety and Health (NIOSH) Education and Research Centers (ERCs) — from the University of South Florida, the University of Alabama at Birmingham, Auburn University, the University of Kentucky, and University of North Carolina at Chapel Hill — to produce a TWH track at the 73rd Workers' Compensation Institute Educational Conference. We shared lessons learned from our work with workers' compensation insurers; the expansion of our employer mentoring program, Health Links™; and our experience hosting educational trainings. More than 100 researchers and workers' compensation professionals attended the TWH sessions.

380

attendees at the event

14

presentations given by our team

1st

time a full day of TWH content was featured at this event

100

people attended the TWH track

6

ERCs collaborated to create a TWH track at the event

\$98,998

awarded

6

projects funded

158

attendees at Research Day

34

student presentations given

6

workplaces and individuals recognized for excellence in workplace health and safety


Pilot projects

Every year, we award funding to support new research in occupational and environmental health and, over the past three years, in TWH. Thanks to funding from NIOSH, we are able to help early career researchers gain experience in the field and support innovative research. We awarded funding to six researchers, ranging from \$11,380 to \$25,000, this year. Projects covered topics such as workplace safety and employee retention in Montana's oil and gas sector; development of personal protective equipment for healthcare workers; and the work, health, and safety of on-demand drivers. Recipients of funding from the previous award cycle have now completed their research and are disseminating their results in peer-reviewed journals and presentations at local, national, and international conferences.

Annual events

Research Day and Celebrating Colorado's Healthiest Places to Work are two events we host every year to encourage networking and share current research. More than 150 people attended Research Day this year to hear about creative and original research being done by our Mountain & Plains Education and Research Center trainees and pilot project researchers. In his keynote address, Colorado School of Public Health Dean Jon Samet highlighted the event's theme of "leaving a legacy." This year marked the 10th anniversary of the school and the center, and we were pleased to celebrate with the many students, faculty, and business leaders who helped us get there.

Celebrating Colorado's Healthiest Places to Work, our annual Health Links event, brought together professionals from across the state to congratulate some of the healthiest employers in Colorado. Five organizations and one individual received awards for their excellence in workplace health and safety. The theme of the event was "the employee experience." The program featured discussions on how to ensure that employees feel connected to their teammates, the mission of the organization, and their community. Keynote speaker Dr. Nita Mosby Tyler, chief catalyst and founder of The Equity Project, LLC, inspired the audience to build a culture of equity and inclusion in their workplaces.



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**My goal is for my research
in workplace wellness to
help improve the everyday
lives of individuals, both
at work and at home.**

KELLY CAVE, MS, PhD CANDIDATE
Occupational Health Psychology trainee,
Mountain & Plains Education and Research Center

Student spotlights

Through our five Mountain & Plains Education and Research Center graduate and post-graduate training programs, we are helping to prepare the next generation of leaders for the occupational health and safety workforce. We provide financial support and interdisciplinary experiences to help fill the growing need for workplace health and safety experts. We have trained 146 students since 2012, and close to 100% of graduates have gone on to pursue careers in occupational health and safety.

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If the workplace is a healthy and happy space, workers will be more productive and they will be more likely to live a life of wellness outside of the workplace.

KATHRYN BUIKEMA, MPH, DO
Occupational & Environmental Medicine Resident,
Mountain & Plains Education and Research Center (MAP ERC)

KATHRYN BUIKEMA
MPH, DO

OCCUPATIONAL & ENVIRONMENTAL MEDICINE (OEM)



Kathryn is a first-year OEM resident with a background in policy and public health. Prior to becoming a resident, she served in the Navy, spent two years in the Peace Corps, and worked on AIDS-prevention programs

with the United Nations, government agencies, and nonprofits. While all aspects of public health and medicine intrigue Kathryn, she decided to pursue a career in occupational medicine because the field allows her the opportunity to help workers and maintain a good work-life balance.

She is currently studying the adverse effects of disinfectants used in hospitals. Her main areas of professional interest are occupational dermatoses and Total Work Health (TWH). She has found the TWH program to be a wonderful way to better serve her patients. She is learning more about ways she can apply the TWH ideas to patients, colleagues, and even her own family. Kathryn is a proud mother of two small children, a one-year-old and a four-year-old. She advises patients to strive for work-life balance, a philosophy that she follows in her own life.

COLLEEN BRENTS
MS, PhD candidate

ERGONOMICS & SAFETY



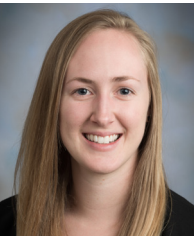
Colleen is an avid rock climber with a passion for both figure drawing and science. When she discovered the field of ergonomics, a discipline that focuses on understanding movement and preventing musculoskeletal

disorders, she knew she had found the perfect combination of her varied interests. Now in her second year of the ergonomics and safety PhD program, she focuses her research on a rapidly growing industry in Colorado: beer brewing.

For her master's dissertation, she studied how workers can safely lift and flip kegs in the production line. Using a wireless motion-capture technology to study worker movement, she examined how, when, and why brewery workers were exposed to ergonomic risks. Her research and the technology she used to conduct it, garnered the attention of a local beer distribution company where she went on to intern after her master's defense. Her research also drew the attention of the manufacturer of the motion-capture tool. She has presented on her work at international conferences in Sweden and Italy. Colleen is now working on her PhD thesis and will be studying how Colorado breweries have changed their approach to safety over time.

KELLY CAVE
MS & PhD candidate

OCCUPATIONAL HEALTH PSYCHOLOGY (OHP)



Kelly is a MAP ERC trainee in the OHP program, a concentration offered through the Colorado State University industrial and organizational psychology program. Growing up in a family that owned a small business, Kelly saw first-

hand how work and life can blend together — for better or worse. She decided to explore a path of study where she could research how the demands of work and personal life affect health. Now, she has almost completed her MS degree in OHP and is on track to receive her PhD in the next few years.

As part of her master's thesis, Kelly helped revamp a work-life balance training originally developed by Gwen Fisher, PhD, the OHP program director. Kelly updated the strategies shared in the course to align with recent research and to help participants apply the skills they learn in their own lives. Kelly and Gwen have led six trainings over the past year, covering a range of strategies for coping with stress, starting at the organizational level and permeating all the way down to the individual employee. After completing her studies, Kelly hopes to continue working in the OHP field as a practitioner who connects the dots between scientific findings and workplace wellness.

CORY WILLSON-KERNS
MS candidate

INDUSTRIAL HYGIENE (IH)



Cory is a second-year student in the MAP ERC IH program. His undergraduate educational background in safety, health, and environmental applied sciences led him, in part, to pursue a career in occupational health and

safety. Prior to joining the program, he worked in construction safety and on the DC Clean Rivers Project, helping to route waste water away from the Anacostia River. Cory is currently in the middle of writing his master's thesis, a research project looking into conservation of worker hearing in tire-changing shops. He is exploring whether the number of tires changed within a certain time span increases workers' risk of hearing damage.

Rather than spending his days in the lab, Cory much prefers to be out in the field, working with people. One of his favorite things about being part of the MAP ERC is the emphasis on working with partners in the community. He is currently working towards becoming a Certified Industrial Hygienist and is considering a wide range of career paths in occupational health and safety after graduation. He hopes that he can bring his “jack of all trades” spirit to whatever path he chooses.

In memory of Brian, 1979–2018.

BRIAN PERRI
MS

HEALTH PHYSICS (HP)

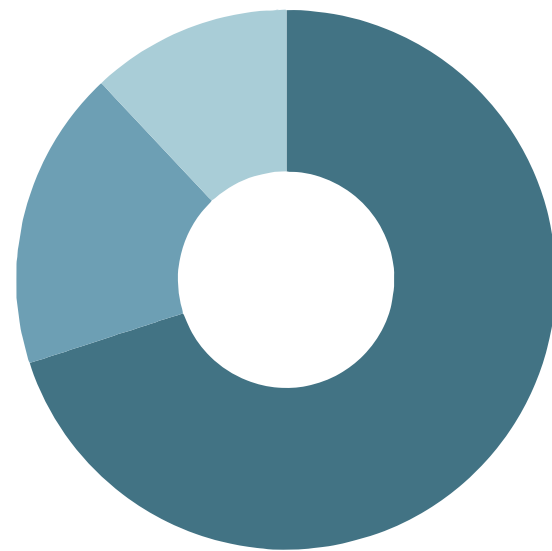


Dr. Thomas Johnson (TJ), Brian's advisor and the director of the MAP ERC health physics program, describes Brian as a great student who loved to learn. For his master's thesis, Brian designed a calculation to measure how radiation affected mice in the nuclear disaster zone of Fukushima, Japan, and their likelihood of developing cataracts. The goal was to use this information to create recommendations for human residents who have not returned to their homes since the 2011 nuclear disaster at the Fukushima Daiichi plant. Brian's thesis passed through the journal review with flying colors and was accepted for publication in Health Physics. In addition to completing rigorous coursework and research, Brian also became a Certified Health Physicist (CHP) by completing both CHP

part 1 and 2 tests, notoriously difficult exams.

When he was not studying, Brian loved to hike and explore in nature. TJ remembers Brian coming to class and often describing a new 14,000-foot climb he had completed over the weekend, with a huge grin on his face. Sadly, Brian passed away while hiking in Rocky Mountain National Park over the summer. He was awarded his master's degree posthumously. He is remembered by those who knew him as a great friend and student with an infectiously positive personality.

FINANCIALS

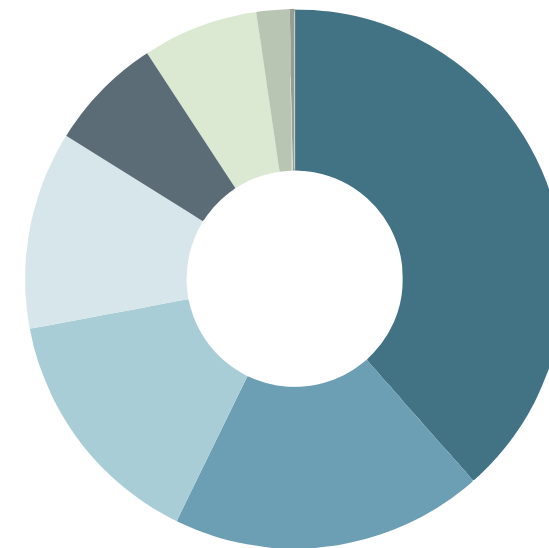


revenue & awards

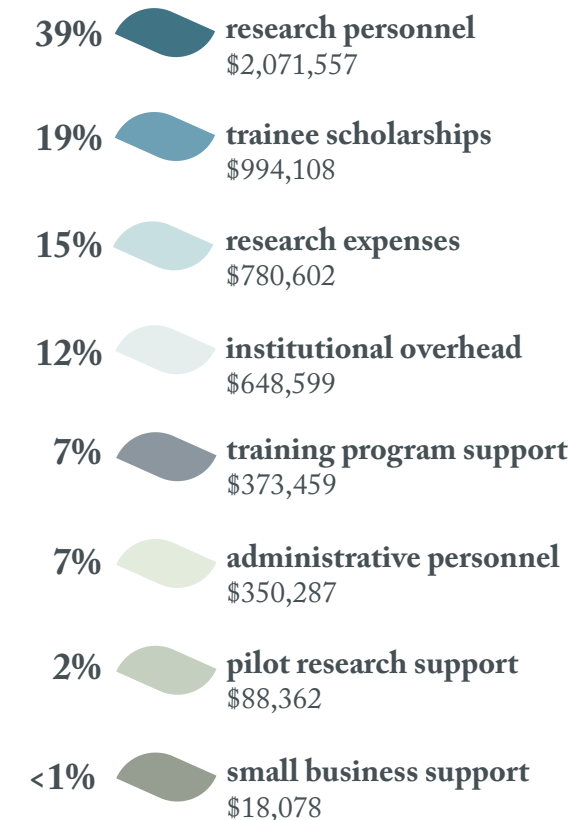


FY18 total / \$6,027,696
FY18 increase over FY17 / \$1,047,054
FY18 % increase over FY17 / 21%

** FY18 runs July 2017-June 2018*



operating expenses



FY18 total / \$5,325,052
FY18 increase over FY17 / \$1,217,770
FY18 % increase over FY17 / 30%

** FY18 runs July 2017-June 2018*



▲ PHOTO BY Daniel Thau Teitelbaum

Thank you

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▲ PHOTO BY Open Press Ltd

ABOUT *the* ARTIST

DANIEL THAU TEITELBAUM

Dr. Daniel (Danny) Thau Teitelbaum has more than 40 years of experience as an occupational toxicologist. Danny is an adjunct professor in the Department of Environmental and Occupational Health at the Colorado School of Public Health (ColoradoSPH) and was formerly an adjunct professor in the division of Environmental Sciences at the Colorado School of Mines. He has consulted for the Environmental Protection Agency and Occupational Safety and Health Administration (OSHA), among others. He participated in the formulation of OSHA standards, including those for benzene, hazard communication, and access to medical records. He has published more than 50 peer-reviewed papers in his career. While his CV is extensive, his photography collection may rival it.

Danny has donated a collection of photographs, many of them his own shots, to ColoradoSPH. He has been taking photographs and making prints for more than 70 years and has participated in several regional and national photo and printmaking exhibitions. He is not much

of a note-taker when he works. Instead, he prefers to listen and watch. That is how his love of workplace photography really took off. He started taking site visit notes in the form of photographs, capturing people working and documenting the risks they were exposed to.

“I used my camera as my notebook. Wherever I was, when I saw something that interested me, I would photograph it,” Danny explained.

Danny has called Colorado home for more than 50 years, but he loves to travel all over the world whenever he gets the chance. The collection of images on the cover of the report, titled “Working Hands,” features workers from across the U.S. and Mexico. He estimates that he pored over more than 600 photographs before selecting 12 of his favorites, 11 of which are featured on the cover. He used silver negatives to create etchings that were then printed on a press.

Special thanks to Danny for donating his art to our center. Many of the images in this report are his work.

“

I used my camera as my notebook.

DANIEL THAU TEITELBAUM, MD
Adjunct Professor, Department of Environmental
and Occupational Health, ColoradoSPH
Photographer and Printmaker



SELECTED PUBLICATIONS

Butler-Dawson, J., Krisher, L., Asensio, C., Cruz, A., Tenney, L., Weitzenkamp, D., ... & Newman, L. S. (2018). [Risk factors for declines in kidney function in sugarcane workers in Guatemala](#). *Journal of Occupational and Environmental Medicine*, 60(6), 548.

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for workers, our economy, and our communities.*

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This publication was supported, in part, by grant T42OH009229 and cooperative agreement U19OH011227, funded by the National Institute for Occupational Safety and Health (NIOSH). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH, the Centers for Disease Control and Prevention or the Department of Health and Human Services.

The images in this report reflect the real experiences of workers and do not necessarily reflect occupational health and safety regulations or best practices. We collaborate with employers to improve all health and safety conditions, striving to reach as many workers as possible.