

# RESILIENCE INFORMATICS IN PUBLIC HEALTH WORKSHOP

A DISCUSSION AND BRAINSTORMING SESSION

NOVEMBER 20TH, 2023  
HEALTH SCIENCES INNOVATIONS BUILDING



9AM-10AM CHECK IN  
10AM-12PM WORKSHOP PT 1  
12PM-1:30PM LUNCH  
1:30PM-4PM WORKSHOP PT 2  
4PM-5PM HAPPY HOUR  
6PM-7:30PM DINNER

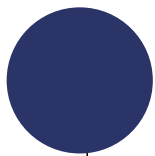
 Humanitarian Assistance  
Technical Support

 THE UNIVERSITY OF ARIZONA  
MEL & ENID ZUCKERMAN COLLEGE OF PUBLIC HEALTH  
Center for Rural Health



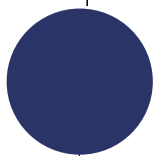
 THE UNIVERSITY OF ARIZONA  
ARIZONA INSTITUTE FOR RESILIENCE  
International Programs

# TABLE OF CONTENTS



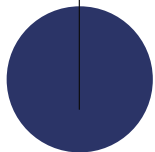
## WELCOME!

Land Acknowledgement .....	1
Location details (map) .....	2-3
Accommodations .....	4
What is Resilience Informatics? .....	5
Purpose of Workshop .....	6
Agenda for meeting .....	7-8
Participant guidelines .....	9



## SPEAKER & PARTICIPANT INFORMATION

Speakers .....	10-11
Facilitators .....	12-13
Participants .....	14-16



## THANK YOU!

# Land Acknowledgement

*We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.*

## Access Statement

*With questions about access or to request any disability-related accommodations in this workshop such as ASL interpreting, closed-captioning, wheelchair access, or electronic text, etc., please contact Maiya Block Ngaybe, [mgblock@arizona.edu](mailto:mgblock@arizona.edu)*

# Location Details

## Venue:

Health Sciences Innovations Building (HSIB)  
1670 E Drachman St, Tucson, AZ

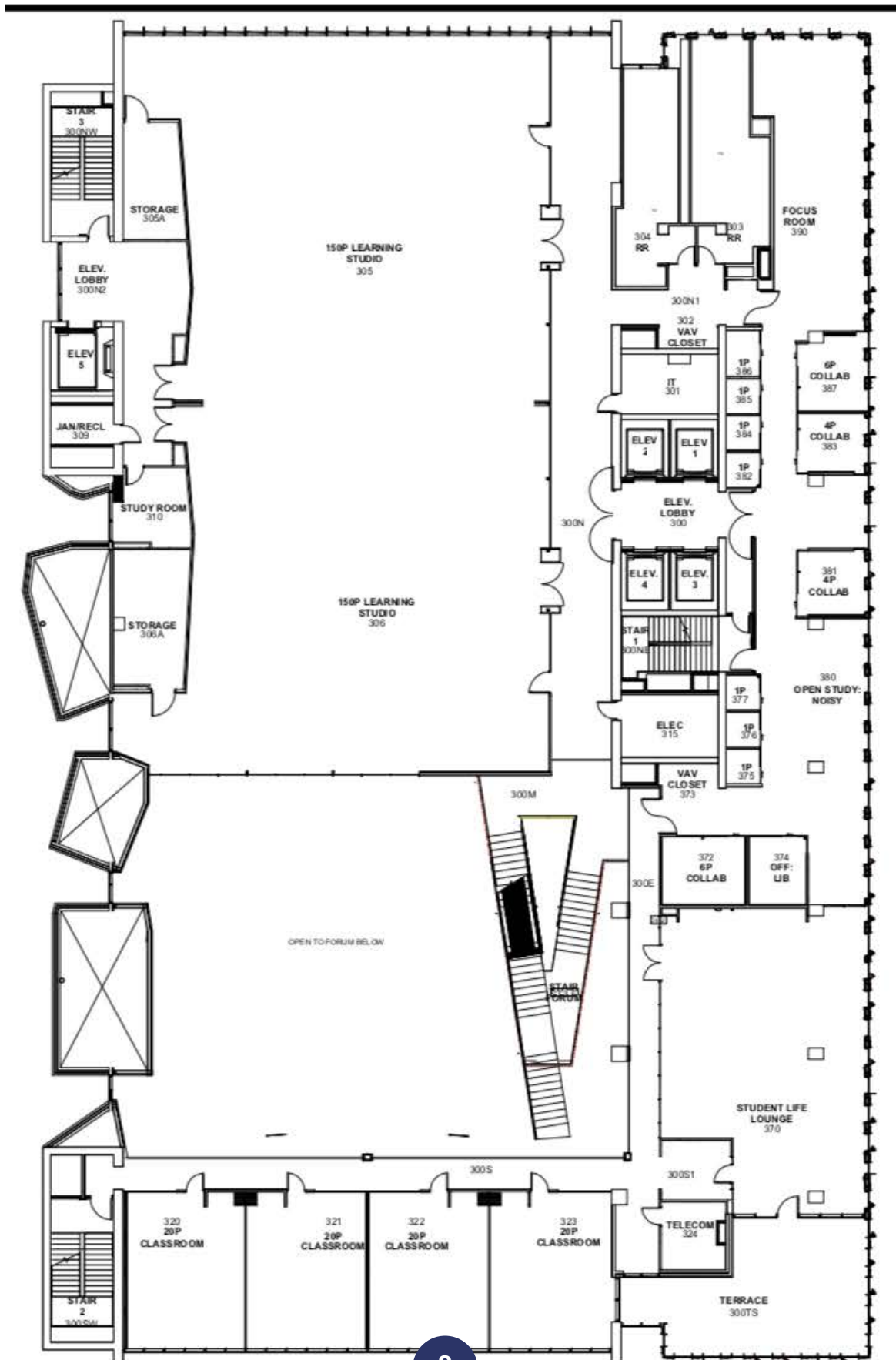
## Highland Garage Parking:

1420 E Helen St, Tucson, AZ

*\*Parking validation will be given in advance via email*



# HSIB 3rd Floor



# Lodging and Travel

**For those of you who requested support for accommodations:**

## **Lodging (Nov 19-21):**

We have made arrangements for our participants to stay at Aloft Hotel (1900 E Speedway Blvd, Tucson, AZ 85719) under the account for this workshop. This hotel is across the street from the University of Arizona and walking distance from the Health Sciences Innovations Building where the workshop will take place (1670 E Drachman St, Tucson, AZ 85721).

For the one or two nights that you will stay in Tucson, please call 520-908-6822 and Erika Romo will make the reservations and direct bill the room and tax to our account.

## **Travel:**

Please keep track of any receipts of travel-related costs (e.g. Lyft or Uber rides) and send these receipts as well as a screenshot of google maps demonstrating the distance you drove to and from Tucson so that we can reimburse your gas expenses. Please ask Maiya Block Ngaybe ([mgblock@arizona.edu](mailto:mgblock@arizona.edu)) if you have any additional expenses related to travel that you would like us to reimburse and we can see if it is an allowable expense for this workshop.

If you did not request accommodations support previously but would like to request help now, please reach out to Maiya Block Ngaybe at [mgblock@arizona.edu](mailto:mgblock@arizona.edu) as soon as possible. Thank you!

# What Is Resilience Informatics for Public Health?

**Informatics** has been defined as the study of information sciences and the collection and storage of data (Luddy School of Informatics, Computing, and Engineering). Informatics tools include data science, artificial intelligence (AI), mobile health, and augmented and virtual reality.

**Resilience** has been defined as the ability of groups of people to weather against adverse events such as climate change related calamities and pandemics (USAID)

**Resilience Informatics (RI)** is the use and development of informatics techniques to materially improve and promote the ability of people, communities, and organizations, to effectively cope with natural and man-made stressors (Iyengar et al, 2023). RI is all about using modern informatics techniques to support the resiliency efforts in handling pandemics, the health effects of climate change and man-made disasters.

# Purpose of the Workshop

During this workshop, we will discuss the scope of this new field of resilience informatics for public health. We will additionally shape the field's future directions and applications.

Workshop attendees include experts in public health, medicine, weather, informatics and more.

Thank you for being a part of this workshop!





# Workshop Agenda



Monday, 20 November 2023



9:00 AM - 5:00 PM

<i>Time</i>	<i>Activity</i>	<i>Room</i>
9:00 - 10:00 am	Check In and light breakfast	Forum
10:00 - 10:30 am	Introduction - Sriram Iyengar and Mary Hayden	Forum
10:30 - 11:15 am	"What is resilience?" - Greg Collins and Liz Petterson	Forum
11:20 - 12:00 am	Group Discussion: To what do we need to be resilient?	322/323
12:00 - 12:30 pm	Lunch break	Student Lounge
12:30 - 1:30 pm	Lightning talks: Examples of Resilience Informatics:  Antonio Hernandez - The Social Vulnerability Index Sameer Halai - WeHealth Jose Florez-Arango - Resilience in scholars, supporting the child, parent, teacher triad with mhealth Enrique Noriega - AZHEALTHTXT	Forum
1:30-1:40 pm	Indigenous Data and Resilience - Andrew Martinez	Forum
1:45-3:30 pm	Group Discussion: Informatics tools and applications	322/323
3:30 - 4:00 pm	Closing Remarks from Sriram Iyengar	Forum
4:00 - 5:00 pm	Happy Hour/ Networking	Forum
6:00 - 7:30 pm	Dinner at El Charro (Food and Soft Drinks covered by event)	

# Discussion Sessions

**Reflection :** What does resilience look like to you?

**11:20 am - 12:00**

To what do we need to be resilient?

**Facilitators:** Mona Arora, Kacey Ernst, and Mary Hayden

**1:40 - 3:30 pm**

- What informatics tools are you using?
- What are the barriers to technological solutions and how do we address them?
- What tools do we need?
- How do we ensure equity across these solutions?

**Facilitators:** Mona Arora, Kacey Ernst, and Mary Hayden

**Reflection :** What does resilience look like to you?

# Participant Guidelines

As we discuss resilience informatics to address public health outcomes, we encourage participants to:

- Take an active role in being present in discussions
- Make room for everyone to participate
- Engage with your group to generate productive conversations
- Minimize distractions such as phone calls, we ask that you step out of the space if there is something you must address
- Take care of yourself, feel free to step out for water or refreshments, to use the restroom, or whatever you may need

# Speakers



## Greg Collins, PhD, MPH

**Associate Vice President, Resilience & International Development  
Research Professor, Arizona Institute of Resilience  
University of Arizona**

Dr. Greg Collins is Associate Vice President for Resilience and International Development and Research Professor at the University of Arizona. Dr. Collins previously served as the Deputy Assistant Administrator (Senior Executive Service) at the United States Agency for International Development (USAID) where he led the Bureau for Resilience and Food Security. In that role he provided strategic vision and oversight for the U.S. Government's global hunger and food security initiative and USAID's efforts to build resilience in areas of recurrent crises. Greg also served as USAID's first Resilience Coordinator and, previously, the founding Director of USAID's Center for Resilience. He is a globally recognized thought leader on resilience and played a lead role elevating resilience in USAID and international development. Prior to USAID in 2010, Greg spent over a decade as a analyst and strategic advisor for a variety United Nations agencies and Non-Governmental Organizations, including the UN Food and Agricultural Organization, UN World Food Programme, UNICEF, and CARE International. He has extensive experience living and working throughout Africa, the Middle East, Asia and the Caribbean. He earned his PhD in Economic Sociology from the UC Davis, his MPH from Tulane University, and his BA in Anthropology from the UC Davis.



## Jose Florez-Arango, PhD

**Assistant Professor of Population Health Sciences  
Director of the MS in Health Informatics Program  
Weill Cornell Medicine**

Dr. Jose Florez-Arango is an assistant professor of population health sciences (interim) in the Division of Health Informatics, and director of the MS in Health Informatics program. Before joining Weill Cornell Medicine, he was an associate professor at the CUNY Graduate School of Public Health and Health Policy. His research interests include: mHealth, low-resource environments, knowledge representation, and low to no code applications.



# Liz Petterson

**Associate Director**

**Arizona Institute for Resilience, University of Arizona**

Liz Petterson is the associate director of Arizona Institute for Resilience (AIR), overseeing operations and management of staff and programs. She also assists in enhancing coordination with the University's Research Development Services, the UA Foundation, and departments, schools, and colleges across campus to help develop new research collaborations and organize the pursuit of new funding opportunities on behalf of AIR's program teams.

A Tucson native and University of Arizona alum, Liz came to AIR following a period as Deputy Director for Pacific Whale Foundation; prior to that she worked over 15 years with Arizona Land and Water Trust, a Tucson-based land and water conservation non-profit where she served more than 10 years as Executive Director. With over 25 years of experience in non-profit land, water, and marine conservation work, she brings solid executive management, collaborative partnership development, and fundraising expertise to AIR, including how to successfully secure federal, state and local funding sources for science-based projects and initiatives.



# Enrique Noriega, PhD, MSc

**Natural Language Processing and Machine Learning Scientist**

**AZHEALTHTXT**

**University of Arizona**

Dr. Enrique Noriega is a Research Scientist at the Computer Science department of the University of Arizona. He is interested, in general, on the areas where there's a solid intersection between computer science and applied mathematics such as: Machine learning, computational statistics, artificial intelligence, etc. His current research focus is on applications of machine learning for multi-hop inference with data acquired from machine reading: information retrieval and information extraction, supported by multiple natural language processing techniques. He is also a software developer. Throughout his professional career He has worked on multiple projects for cloud, desktop and mobile platforms. Most of his work is coded with Scala and Python, but is also proficient with C, C#, Java, R and to a lesser extend with Matlab and JS.



# Antonio Hernandez, MEP

**Community Integration Officer Directors Office, Office of Health Equity Arizona Department of Health Services**

Dcn. Antonio Hernandez is the Community Integration Officer (CIO) with the Arizona Department of Health Services (ADHS) Division of Policy and Intergovernmental Affairs. Antonio provides leadership and guidance to ADHS leadership and community partners on advancing public health initiatives, health equity, and eliminating health disparities within the disability community of Arizona.

Dcn. Hernandez has over 15 years of public health serving and is a Master Exercise Practitioner, through FEMA's Emergency Management Institute and works with county public health, tribes, health care coalitions, and community partners on preparedness and community resilience initiatives. Antonio helped develop and institute the state's Emergency System for Advanced Registration of Volunteer Health Professionals (ESAR-VHP), a system to rapidly integrate medical responders and community volunteers for disaster response. He is ordained clergy with the Catholic Roman Diocese of Phoenix, and he also serves as the current chair for the Arizona's Governor's State Citizen Corps Council, is a member of the States Access and Functional Needs Task Force, and serves as Co-chair for the ADHS Community Advisory Board on Accessibility and Inclusion. A graduate from Grand Canyon University with a Bachelors of Science Degree in Human Biology, Antonio is dedicated to public health preparedness and community resilience initiatives. As CIO his mission is to "Advance public health initiatives for disability and at-risk individuals and communities, by enhancing health equity and eliminating health disparity through strategic initiatives and community partnerships."



# Sameer Halai, MSI

**Chief Executive Officer and Founder of WeHealth**

Sameer Halai is the Founder and CEO of Wehealth, a public health platform built as a response to the pandemic. Prior to this he co-founded Jirav, a financial forecasting platform as well as SunFunder, bringing electricity to people living in energy poverty. He also led design at Limeade, an employee wellbeing platform and has worked on research projects at Microsoft Research, IBM Research and the University of Michigan. Originally from Mumbai, Halai has a degree in computer engineering and is one of the first people in the world with a Masters in Social Computing.

# Andrew Martinez

**SALT RIVER PIMA-MARICOPA INDIAN COMMUNITY**

**Research Coordinator**

**Collaboratory for Indigenous Data Governance**

**University of Arizona**

# Facilitators



## **Mary Hayden, PhD, MA**

**Research Professor**

**Lyda Hill Institute for Human Resilience**

**University of Colorado, Colorado Springs**

Mary H. Hayden is a behavioral scientist and Research Professor at the Lyda Hill Institute for Human Resilience at the University of Colorado, Affiliate Scientist at the National Center for Atmospheric Research (NCAR), and Adjunct Faculty at the University of Colorado's School of Public Health. Dr. Hayden's research interests include a broad range of interdisciplinary topics including vector-borne diseases and extreme heat with an emphasis on the integration of physical and social sciences in the study of climate-sensitive health and disease issues.



## **Sriram Iyengar, PhD, MSc**

**Associate Professor, Internal Medicine Director,  
Clinical Outcomes Research**

**Associate Professor, BIO5 Institute  
University of Arizona**

Much of Dr. Iyengar's research work has been focused on improving community health and addressing health inequity, in global and US contexts by technology mediated tools including mHealth on smart phones. In 2009 he was the recipient of a global award from Microsoft Research to develop and test media-rich smartphone systems to improve the performance of community health workers in Colombia that resulted in statistically significant improvements in errors and protocol adherence. More recent work has included research in the use of such tools to increase health literacy, self-efficacy and self-management, among veterans with Congestive Heart Failure in the Pittsburgh area, and Diabetics (Type II) in rural Louisiana. A related area of research concerns health behavior change. Here, his work is in the vibrant emerging discipline of Persuasive Technology that is concerned with designing technologies, especially information and communications technologies, for health promotion and development of behavioral interventions. As smart and connected health systems continue to play an increasing part in everyone's lives, especially younger people, such research will grow in importance. In addition, he is especially qualified in the important area of healthcare analytics, including biostatistics and data science, due to a unique combination of training, experience, and scientific interests. His education is interdisciplinary and includes Computer Science (PhD), Statistics (MS), Electrical Engineering (MSc), and 8+ years of experience as statistical consultant in the College of Medicine, The Ohio State University.



## Kacey Ernst, PhD MPH

**Professor & Department Chair, Epidemiology and Biostatistics  
Epidemiology and Biostatistics Department  
Mel and Enid Zuckerman College of Public Health  
University of Arizona**

Dr. Kacey Ernst is a Professor of Epidemiology and Chair of the Department of Epidemiology and Biostatistics in the College of Public Health. Dr. Ernst has been a member of the AZHEALTHTXT team since its inception. She is currently co-leading an effort to develop a center for climate change and health on campus. Her primary body of research focuses on understanding vectorborne and zoonotic diseases. Her research interests include: infectious disease, community engagement, climate change, built environment.



## Mona Arora, PhD, MSPH,

**Assistant Research Professor  
Community, Environment & Policy Department  
Program Manager, AHEAD AZ, Center for Rural Health  
Mel and Enid Zuckerman College of Public Health  
University of Arizona**

Dr. Mona Arora, is co-leader of the [AzCRH-ADHS CDC COVID Disparities Initiative](#), known as AHEAD AZ (Advancing Health Equity, Addressing Disparities in Arizona). Dr. Arora, who is assistant professor at the Zuckerman College of Public Health and COVID Response Team member at the University of Arizona (UArizona), brings substantial expertise in program evaluation, emergency preparedness and planning, community resilience, climate change and health.

Prior to AHEAD, Dr. Arora worked in public health emergency preparedness in the Southwest for 12 years. Likewise, Dr. Arora is a member of the UArizona Campus Incident Response Team (CIRT) Pandemic Influenza Planning Group, Chair in the Medical Countermeasures Planning Sub-group, and Chair of the COVID Vaccine Taskforce. Dr Arora received her PhD in geography from UArizona and her MSPH in tropical medicine from Tulane University.



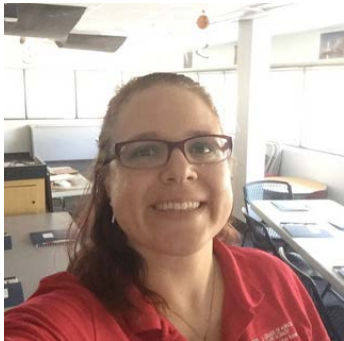
# Participants



## **Theresa Cullen, MD, MS**

Dr. Theresa Cullen is a family physician who began her career with Indian Health Service (IHS) as a family practice physician and worked in leadership positions with a focus on equity, improved health status, and informatics. Dr. Cullen was the Chief Medical Information Officer for the Veterans Health Administration from 2012-2015 and Associate Director of Global Health Informatics at the Regenstrief Institute. Her work focused on technology to improve health outcomes in low- and middle-income countries.

Dr. Cullen became the Public Health Director of Pima County, Arizona, in May 2020. She guided the county through the COVID-19 pandemic. She developed a strategic approach to transformational health status change with a goal of helping achieve health equity. She works closely with federal, state and local partners to ensure that community needs are integrated with a goal of health justice. Interest areas include: public health informatics; health justice.



## **Sybil Peters**

Wife and mother of four Daughters, Sybil Peters has a BA from NAU in Early Childhood Education. Currently she directs all SNAP-Ed operations in Pinal County and La Paz County with a staff of five. There they develop and implement Active Living, Childhood, and Food Systems PSE strategies specific to community needs to further PSE goals of community members and partners. Interest areas include: public health, nutrition, physical activity, gardening, community outreach



## **Summer Hassan**

Summer Hassan, COVID-19 Health Disparities grants manager at the Arizona Advisory Council on Indian Health Care. With extensive resources and experience, she is committed to creating meaningful change in healthcare, particularly for underserved populations. Summer holds a bachelor's degree in Global Health and a certificate in cross-sector leadership, which equips her with the skills and knowledge to address complex healthcare challenges.

Summer's passion for improving healthcare was exemplified during the COVID-19 pandemic when she led one of the largest vaccine sites in the country. Her cross-sector leadership allowed her to collaborate effectively with non-profit organizations and the public and private sectors to ensure a smooth vaccine rollout. She is poised to impact healthcare in the region significantly. Interest areas include: COVID-19 Health Disparities and Pandemic Preparedness



## **Lilliana Cardenas**

Lily has over 22 years of experience in public health and social work, addressing social justice, health equity, education, and community health issues. As the Administrator for the Resilience, Impact, Sustainability, & Empowerment Subdivision at Maricopa County Department of Public Health (MCDPH). In this role, she oversees the Community Health Needs Assessment (CHNA), the Community Health Improvement Plan (CHIP), and programs such as Health Disparities, Health Literacy, Refugee, Immigrant, & Migrant, Climate Health, and SNAP-ed. She provides strategic direction and oversight to engage, empower, and collaborate with diverse community partners to improve health outcomes and reduce health inequities. Interest areas include: CHNA, Health Equity, SDOH, CBPR



## **Brianna Rooney, MPH**

Brianna Rooney, DrPH(c) currently works with the Arizona Coalition for Healthcare Emergency Response as the Southern Region Manager. Additionally, she works as student with Arizona Center for Rural Health Flex program. Since 2016, she has volunteered as the Director of Member Relations for the Association of Healthcare Emergency Preparedness Professionals (AHEPP). In 2019, she moved to Arizona from Lincoln, Nebraska where she worked for three years with over 60 critical access hospitals as the Hospital Preparedness Program Manager at the Nebraska Department of Health and Human Services. Interest areas include: healthcare emergency preparedness, rural health, critical access hospitals.



## **Tim Lant, PhD, MS**

Tim Lant is an applied mathematician with 20+ years working in health-related fields including epidemiology, healthcare finance, public health preparedness, medical countermeasure development, and resilience. He is currently the Director of Program Development at ASU and leading the PI for the Arizona Social Vulnerability Index as part of the Arizona Health Improvement Plan.

epidemiology, modeling, public health, resilience

## **Alex Edwards**

Alex Edwards is a meteorologist at the National Weather Service in Tucson, AZ. Areas of interest include: weather, climate, public safety.



## **Patrick Wightman, PhD**

Dr. Wightman is a health economist focusing on program and policy evaluation. After completing his PhD in Public Policy at the University of Chicago and a post-doc at the University of Michigan he spent a year as Sr. Economic Analyst with the Oregon Health Authority, prior to joining the UA. His areas of interest include health data systems and health disparities, particularly with respect to cancer care, maternal and child health, and patient navigation and community health workers. Areas of interest include: program evaluation, health data systems/resources, cancer, and maternal & child health.



## **Darien Fuller, MS**

Darien Fuller (she/her) is an Epidemiologist with AACIHC. She is Prairie Band Potawatomi and Diné. She grew up in Shonto, Arizona on the Navajo Nation. As a first-generation college student, she completed her B.S. in Public Health at Northern Arizona University, with minors in Biology and Indigenous Health Studies. Then, she went on to the University of Arizona to complete an M.S. in Epidemiology. She is dedicated to serving Indigenous communities and their members. Darien is passionate about Public Health and the prevention of disparities and diseases that are currently being faced in our Tribal Nations. Areas of interest include: COVID-19, Tribal Health, Statistics

**Tim Frankenberger**  
**Brian Fernandez**  
**Yevheniia Varyvoda**  
**Kelly McGowan**  
**Kerri Rittschof**  
**Joseph Karanja**  
**Jeff Axtell**  
**Matthew McGlone**  
**Brenda Sanchez**  
**Evelyn Whitmer**  
**Hsini Lin**  
**Marc Singer**  
**Blake Scott**  
**Onicio Leal Neto**

**Sheryl Nelson**  
**Nirav Merchant**  
**Zackry Guido**  
**Corrie Hannah**  
**Alex Edwards**  
**Kristina M Currans**  
**Charles Gerba**  
**Charles Kmet**  
**Maiya Block Ngaybe**  
**Myla Gonzalez**  
**Grace Bohan**  
**Andrew McNair**  
**Lidia Azurdia Sierra**  
**Daniel Leon**  
**Zachary Wellington**

# Thank You!

We respectfully acknowledge and thank our speakers, facilitators, partners and funders for their help putting together this event, including:



THE UNIVERSITY OF ARIZONA  
ARIZONA INSTITUTE FOR RESILIENCE

International Programs



Humanitarian Assistance  
Technical Support



THE UNIVERSITY OF ARIZONA  
MEL & ENID ZUCKERMAN COLLEGE OF PUBLIC HEALTH

Center for Rural Health



**AZHEALTHTXT**  
ARIZONA



THE UNIVERSITY OF ARIZONA

Mel & Enid Zuckerman  
College of Public Health



Arizona Institute  
for Resilience