

COVID-19 Healthcare Coalition

**“We have a long way to go before this crisis is over.
Together, we will make a difference in this fight.”**

Dr. John Halamka, President, Mayo Clinic Platform

Dr. Jay Schnitzer, Chief Medical and Technology Officer, MITRE

Our Mission

The COVID-19 Healthcare Coalition is a private-sector led response that brings together healthcare organizations, technology firms, nonprofits, academia, and startups to preserve the healthcare delivery system and protect U.S. populations.

<https://c19hcc.org>



MITRE, a public interest research organization which operates federally-funded research and development centers, is operating the COVID-19 Healthcare Coalition on behalf of the private sector

Guiding Principles

1. Everyone participates for the **benefit of the country only** – no preferential advantage to anyone.
2. Everyone cooperates and **openly shares** their plans.
3. Nobody will get paid for coalition work – without exception. Everyone brings their own resources – **no money exchanged**.
4. **Verbal agreements** will suffice to get us started.
5. Agree to these terms and conditions and you are in.

Partial Member List

Public Coalition Members (over 1,000 total members)

- Alliance of Chicago Community Health Centers
- Alliant Health Group
- Allscripts
- Amazon Web Services
- Ambient Clinical Analytics
- Ames Laboratory
- Apervita
- Arcadia.io
- Artificial Intelligence in Healthcare
- ATA
- athenahealth
- Atrius
- Avecin
- Avery Dennison Medical
- Aviv Growth Partners
- Aya Healthcare
- Beacon Healthcare Systems
- Bodesix
- BlackThorn Therapeutics
- Blockit
- Boston Children's Hospital
- Boston Medical Center
- Boston University
- Bottomline Technologies
- Box
- Brainworks.ai
- Buoy Health
- BurstIQ
- C3.ai
- Caltech
- Cardinal Health
- Caresyntax
- Cedars-Sinai Health System
- Cerner
- Change Healthcare
- Chartis
- CitiusTech
- Clinical Architecture
- Collaborate
- Columbia International eHealth Laboratory
- CommonWell Health Alliance
- Cotiviti
- COVID SafePaths
- Cox Business
- Define VC
- Deloitte
- Designing for Analytics
- Diagnostic Robotics
- DXC
- Endpoint
- Epic
- Esri
- FairWarning
- Fusion Consulting
- Eureka AI
- Genentech
- Genialis
- Georgia Tech Research Institute
- Global Healthcare Exchange
- GoInvo
- Google
- Greenway Health
- hc1
- HCA Healthcare
- Health Catalyst
- Health Gorilla
- Hispanic Association of College & Universities
- HL7
- IBM Watson Health
- In-Q-Tel
- Infinite Leap
- Informatica
- Innovaccer
- Innovu LLC
- Insilico Medicine
- Instant Access Medical
- Intel Corporation
- Intelligent Medical Objects
- Intermountain Healthcare
- IQVIA
- Jataware
- KPN Knowledge Mgt.
- LabCorp
- Lantana Consulting Group
- Leavitt Partners
- Leidos
- LHKO
- Lightbeam Health Solutions
- Llamasoft
- LMI
- LogicStream Health
- Lumeris
- MassChallenge
- MayaMD
- Mayo Clinic
- MazikGlobal
- McMenamin Law Offices
- Mediktor
- Medtronic
- Metadvice
- Metidata Solutions
- Microsoft
- MIT
- MITRE
- MITRE Engenuity
- Netrias
- nference
- Nightingale Partners
- Northwestern Medicine
- NThrive
- Nutanix
- Oak Ridge Associated Universities
- Oasis Labs
- Odgers Berndtson
- Okta
- Omelas
- Option Care Health
- Optum
- OSF HealthCare
- Oura
- Palantir
- Pandexio
- PatientLink
- Pfizer
- PhenoMX
- Philips
- PointClickCare
- Prism Health AI
- Purdue University
- QueueDr
- Rauland, division of Ametek
- Red Hat
- Redflag Artificial Intelligence
- Regenstrief Institute
- Reingold Inc.
- Resilinc
- rfxcel
- RGI Informatics
- RTSync
- Rush University System for Health
- Sachs Policy Group
- SafeGraph
- Salesforce
- Sandia National Labs
- SAP
- SAS
- SCP Health
- SEI
- Sequoia Applied Solutions
- Simeio
- Simudyne
- Skyscape
- Slack
- SMI
- SOC Telemed
- Sodexo Health Care Services
- SparkBeyond
- Splunk
- St. Clair Hospital
- St. Elizabeth Healthcare
- St. Onge Company
- Starschema
- Strata Decision Technology
- Supply Chain Sherpas
- Symphony Ayasdi
- Tableau
- Teladoc Health
- TensorX
- Teradata
- Texas e-Health Alliance
- The Center for Supply Chain Research® - Penn State Smeal College of Business
- The Pew Charitable Trusts
- Topo.ai
- Traction & Scale
- Trapollo
- TREND Community
- U.S. Civilian Corps
- Uncharted Software
- University College of London
- University of Bordeaux
- University of California at Davis
- University of California Health System
- University of Maryland
- University of Nebraska Medical Center/Global Center for Health Security
- Vcinity
- Veradigm
- Virta Labs
- VMASC, Old Dominion University
- Well Health
- XIFIN
- ZocDoc

TOGETHER WE CAN

“The COVID-19 Healthcare Coalition is a private sector-led response that brings together healthcare organizations, technology firms, universities, academics, and startups to preserve the healthcare delivery system and help protect U.S. populations. Together, we’re working to provide data-driven, real-time insights that improve outcomes.”

We have a long way to go before this crisis is over. Together, we will make a difference in this fight.”

DR. JOHN HALAMKA, President of Mayo Clinic Platform

DR. JAY SCHWITZER, Chief Medical and Technology Officer at MITRE



ACHIEVING REAL-TIME LEARNING FROM PATIENT DATA

We’re working to identify effective treatments for COVID-19 patient care. Members are using a common language and approach to scan their patient data for positive trends, answering questions such as “Which treatments are working for which cohorts.” By federating this results, we can use large-scale analytics to learn in real time.

[FIND MORE](#)

Standards for Federated Analytics [2]

Consistent Shared Patient Program [2]

Natural Language Processing Tools for Researchers

The Fight Is In Its - Patient Coalition [2]

Webinars Approved by CMS

SUPPORTING AN AFFORDABLE AND SCALABLE SUPPLY CHAIN

We’re working to increase the supply of critical equipment by building existing capacity, alternative sourcing, and advanced manufacturing solutions. For example, we’ve identified methods for sterilization and reuse of N95 masks to extend product life and have issued guidance for 3D printing of PPE. The coalition’s Demand Allocation model helps state and county leaders track outbreaks and predict demand for PPE.

[FIND MORE](#)



PPE Demand Model [2]

Supply Chain Marketplace Catalog

Evaluation of Decentralization Technologies for the Reuse of N95 Respirators

Adapting Existing Models for Healthcare Settings

COVID-19 Ventilator Resources



INFORMING AND ADVOCATING FOR COORDINATED ACTION

Absent vaccines and drugs for COVID-19, the use of non-pharmaceutical interventions (NPIs) is a primary strategy to reduce risk to communities. The coalition tracks, visualizes, and models these actions to provide leaders with insights into how NPIs may be impacting epidemic curves.

[FIND MORE](#)

COVID-19 Decision Support Dashboard

Modeling Tool for Regional Insight into the Dynamics of COVID-19 Hospital Capacity and NPIs [2]

Real-Time Tracking of Statewide NPI Implementations

Secondary Authority Testing Best Practices

Amplification of Health Disparities for COVID-19

Coalition Website: <https://c19hcc.org>

CLINICAL CARE OUTCOMES:

Achieve real-time learning from patient data

CRITICAL SUPPLIES:

Support an affordable and scalable supply chain

PUBLIC GUIDANCE AND POLICY:

Inform and advocate for coordinated action

REAL-TIME CLINICAL INSIGHTS

Partnering for Impact with EHRs and Analytics Companies

- Developed a Minimal COVID Data Dictionary for patient data sharing and standards for distributed analytics at <http://mCOVID.org>
- Investigating **potential therapeutics** to prevent and treat COVID-19 through [federated analytics](#) on the effectiveness of treatments
- Studying long-term [infection](#)
- *Emerging:* partnering with EHRs to design **early detection and monitoring** of COVID-19 based on EHR data

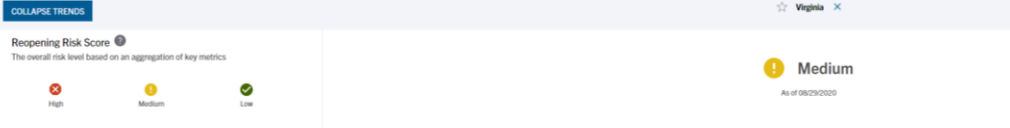
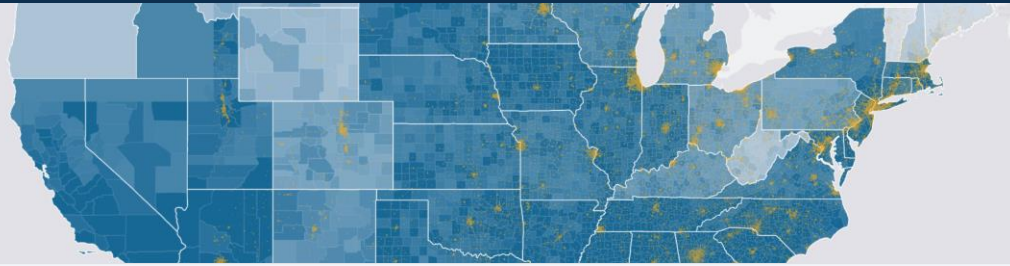
Working with Allscripts, athenahealth, Cerner, Epic, Health Catalyst, and others



EPIC HEALTH RESEARCH NETWORK | FACILITATING RAPID SHARING OF NEW MEDICAL KNOWLEDGE

COVID-19 **DECISION** SUPPORT DASHBOARD

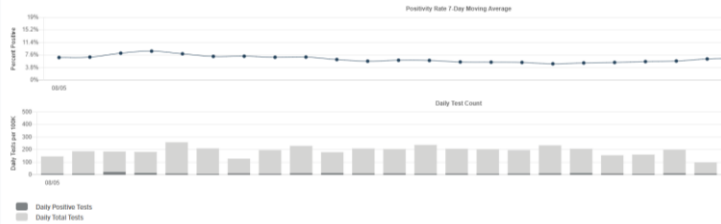
▶ Watch the demo video!



What is the status of the outbreak?



Data Source: [Covid Tracking API](#)



HIDE TRENDS

INFORMING SOCIAL POLICIES

Decision Dashboard

This [Dashboard](#) uses location specific data to help public leaders, business owners, and other community-based decision makers answer pandemic related questions. It provides a picture of what actions may need to be taken to improved public safety.

Health Inputs

- NPI Policy Restrictions
- Case Trend Decline
- Positive Testing
- Reproduction Rate (Rt)
- Death Trend Decline
- Population Movement
- Telehealth Capacity
- Age/Race Mortality

Socioeconomic Inputs

- Consumer Spending
- Incidents of Anxiety/Depression
- Unemployment and Economic Risk
- Virtual Learning Capacity

Forecasted Data

- N95 Mask Demand
- ICU Bed Demand
- Hospital Bed Demand

Developed in partnership with Esri, Jataware, Llamasoft, SafeGraph, Surgo Foundation, and Tableau

C19HCC has made rapid national impact...

DELIVERED 675,000 masks

VALIDATED N95 mask
decontamination strategies

DEVELOPED PPE demand model

CONNECTED suppliers to buyers

UNLOCKING large-scale
analytics for COVID-19

ADVANCING convalescent
plasma research

COLLABORATING on best
practices and protocols

DEVELOPING the COVID-19
Decision Support Dashboard

PROVIDING insights on the
impact of social policies

PROMOTING innovation in
testing and contact tracing

...and working together, that will continue.

THANK YOU | QUESTIONS

COVID-19 Healthcare Coalition

THE FIGHT IS IN US

Brian Anderson, MD
Katy Warren

The Coalition



THE FIGHT IS IN US – Fighting it Forward

COVID-19 is affecting every aspect of our lives

As business, non-profit, and community leaders, we understand that this has not impacted all of us equally

Help COVID-19 survivors help others – The Fight Is In Us – connecting survivors with licensed blood and plasma donor centers to increase the available supply of CCP

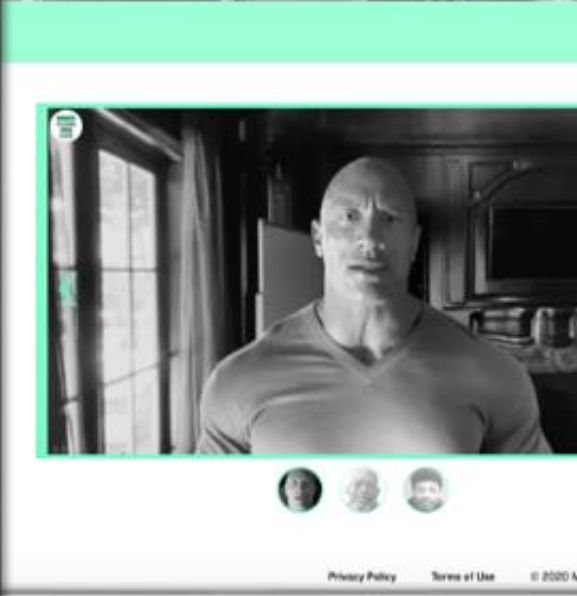
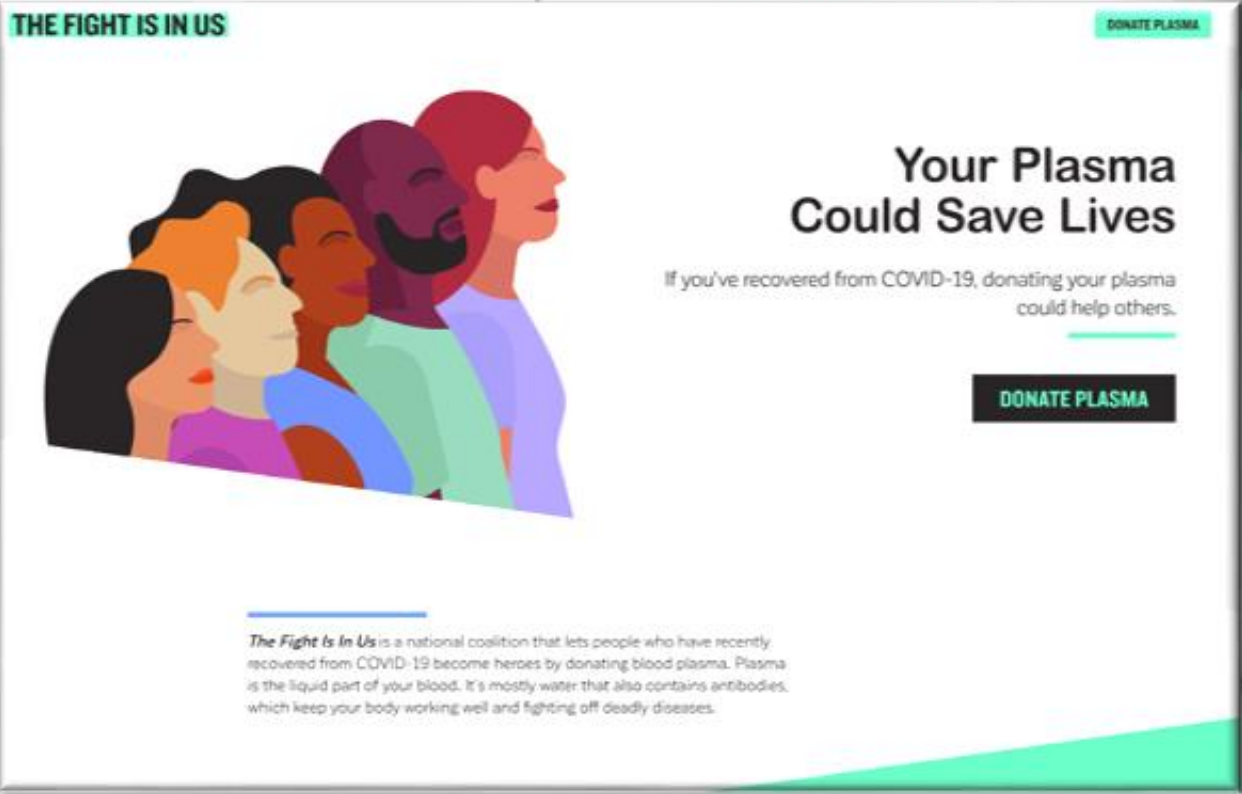
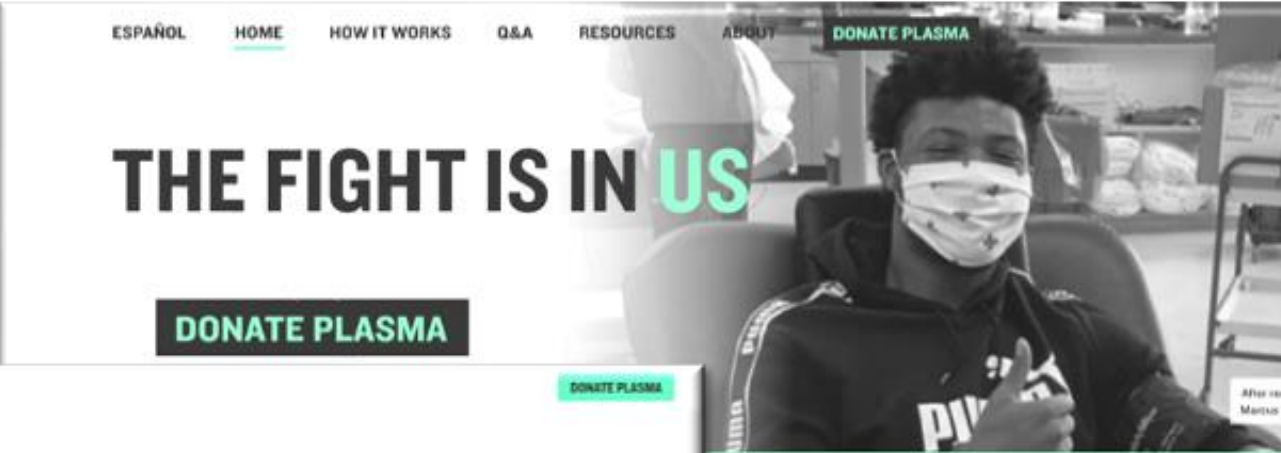
Core Principles

Engagement: **Come together** to ensure that survivors donate, collection capacity is maximized, and distribution is optimized

Evidence: Let **science** be our guide

Equity: Ensure equity in the **development of and access to affordable, safe, and effective treatments** for COVID-19

www.thefightisinus.org



yes

Have you ever been diagnosed with HIV?

no

Have you ever been diagnosed with Hepatitis B or Hepatitis C? You may still be able to donate, but not at all locations.

no

Will you need an Uber ride to or from the donor center?

no

Enter your ZIP Code below to find the nearest donor center.

You have selected ZIP Code 22102

Thank you. Here are the nearest donor centers, sorted by distance from your ZIP code. Please visit the website or call the center to schedule your appointment. To learn more about blood and plasma collection see [How It Works](#). You can also [try another ZIP Code](#).

American Red Cross - Fairfax Blood Donation Center
8550 Arlington Blvd Ste 325 - Fairfax, VA
About 5 miles away

Inova Blood Donor Services At Woodburn
3289 Woodburn Rd - Annandale, VA
(866)256-6372
About 7 miles away

NEXT STEPS

NEXT STEPS

Powered by Microsoft Azure

THANK YOU | QUESTIONS

COVID-19 Healthcare Coalition

Wastewater Based Epidemiology (WBE)

Kunal Rambhia, PhD

Why Wastewater?

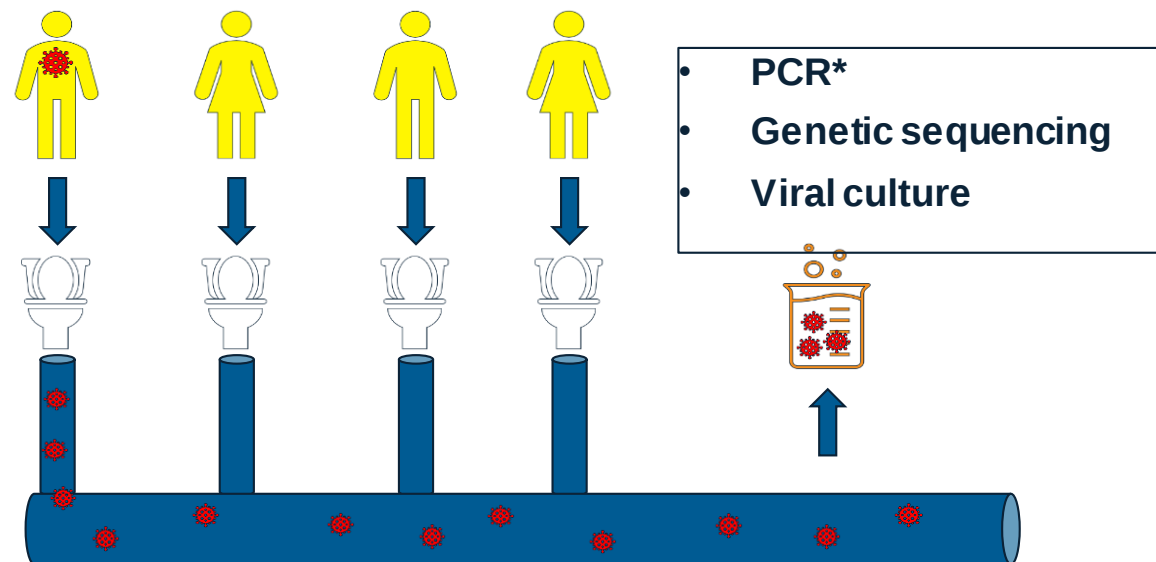
Early warning indicator

Cost-effective for population surveillance

Non-invasive, passive testing

Enduring value

*PCR: Polymerase Chain Reaction



Examples of End Users



Public Sector

Federal
State
County/Municipality
Local



Group Quarters

College/University
Military installation



Congregate Settings

Nursing Home
Prison/Detention Center
Factory/Business

Technical and logistical challenges are specific to each application of WBE

End-to-End WBE Stakeholders

Technical and logistical challenges are specific to each application of WBE



Sample Collection

Academics
WHO
Wastewater Plants
EPA
End Users

Sample Processing

Academics
WHO
Biotech Industry

Data Analysis

Academics
WHO
End Users

Decision Makers

Academics
WHO
State/Tribal
Local Health Dept
Detention Centers
Prisons
Nursing Homes
Private Companies

Enablers

USG
WHO
Water Research
Foundation
Industry Consortia
Academic Consortia
Nonprofit Orgs
Philanthropies

EPA: Environmental Protection Agency
USG: U. S. Government
WHO: World Health Organization

THANK YOU | QUESTIONS

Wastewater-based Epidemiology (WBE): *Pandemic Launch of a Scientific Discipline*



Rolf Halden, PhD, PE

Biodesign Center for Environmental Health Engineering

The Biodesign Institute, Arizona State University

OneWaterOneHealth.org – A Nonprofit Project of the Arizona State University Foundation

AquaVitas, LLC – An Arizona State University Startup Company

October 15, 2020

Human Health Observatory (HHO) at Arizona State University

... An Early Warning System Established in 2000s

- >500 WWTPs globally; >400 in U.S.

Representative of 15,000+ U.S. plants

Unbiased national estimates

- >12% of U.S. pop.; >40M people
- >250M people worldwide
- Largest archive in the U.S./world
- Anonymity through size



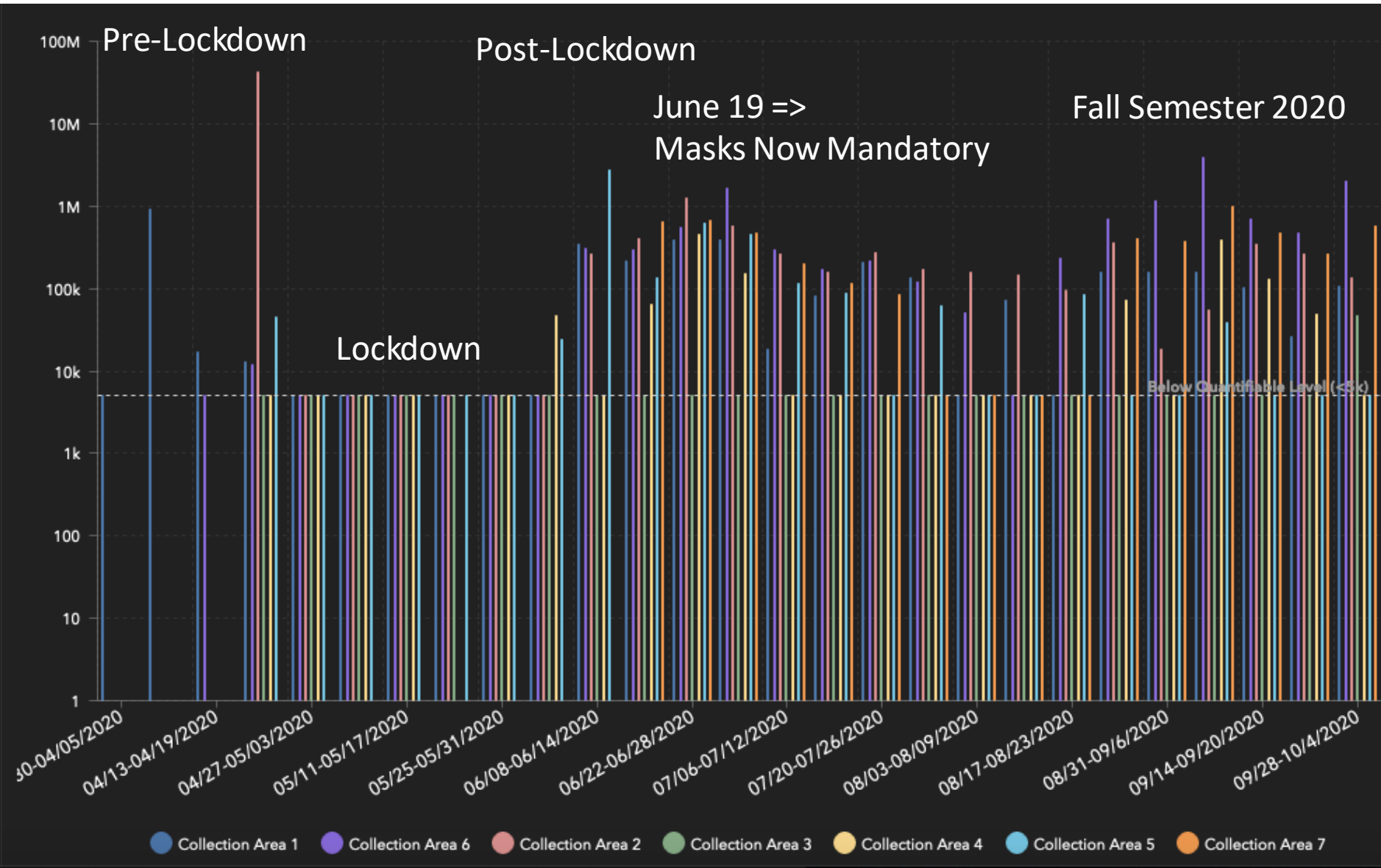
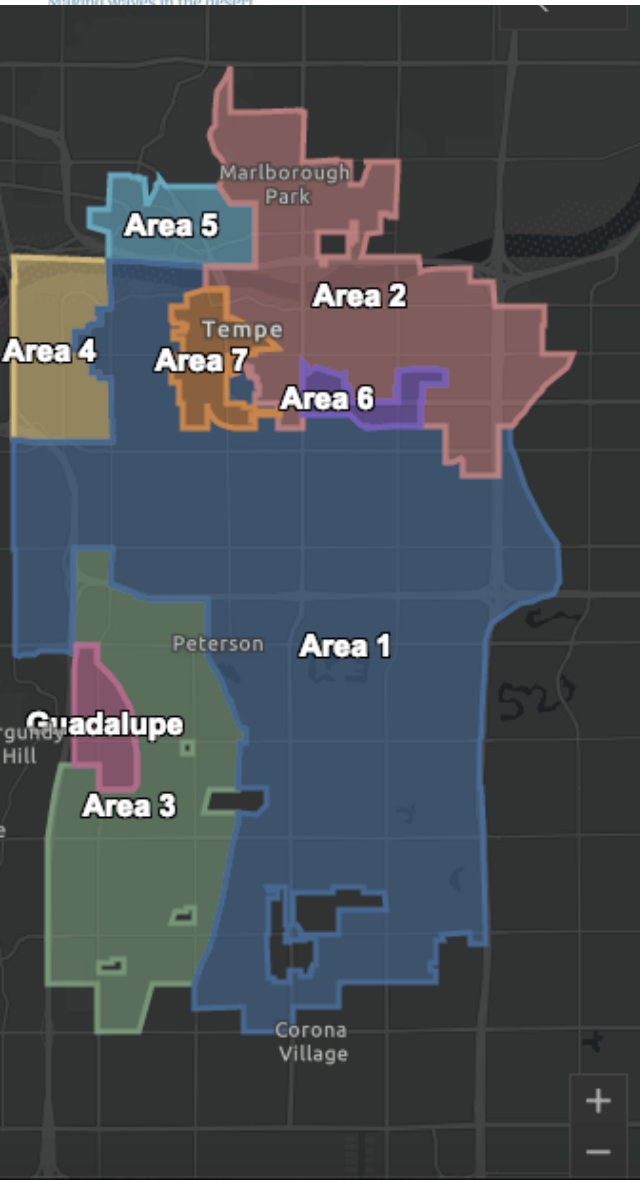
Environ. Sci. Technol. 2014. 48, 3603–3611

Venkatesan & Halden, 2014. *Environ. Sci. Pollut. Res.* 22 (3), 1577-1586

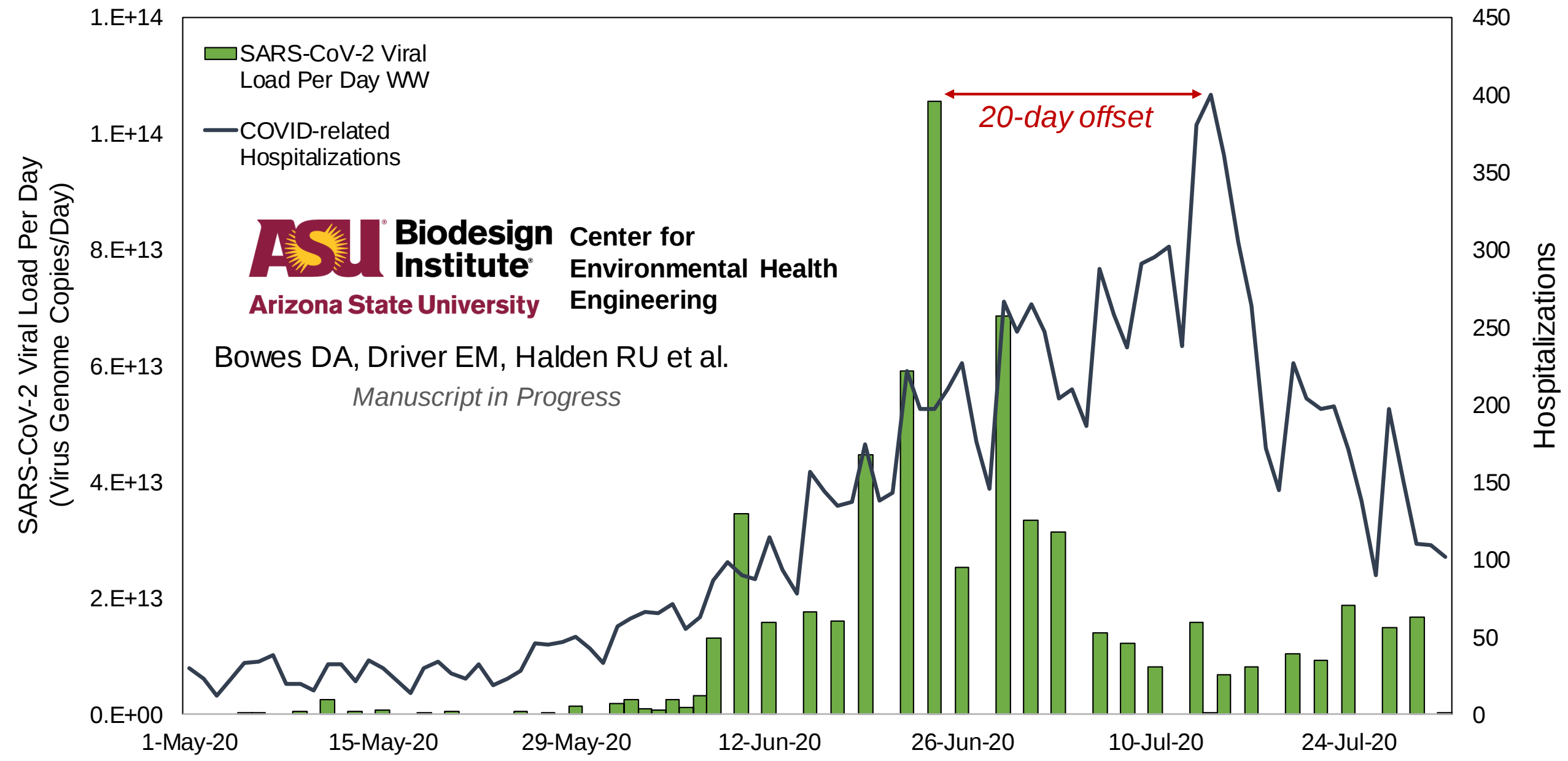
WBE Milestones for the U.S.

- **2004** – WBE Discovery of antimicrobials as pollutants
- **2017** [FDA Ban](#) of triclocarban & 18 other risky antimicrobials
- **2018** – [World's 1st Opioid WBE Dashboard](#)
- **2019** – [1st U.S. Infectious Disease WBE Monitoring Network](#)
- **5/2020** – [World's 1st COVID-19 WBE Dashboard](#) (Tempe/ASU)
- **8/2020** – NSF [Research Collaboration Network](#) (RCN)
- **8/2020** – CDC Launches National Wastewater Surveillance System ([NWSS](#))

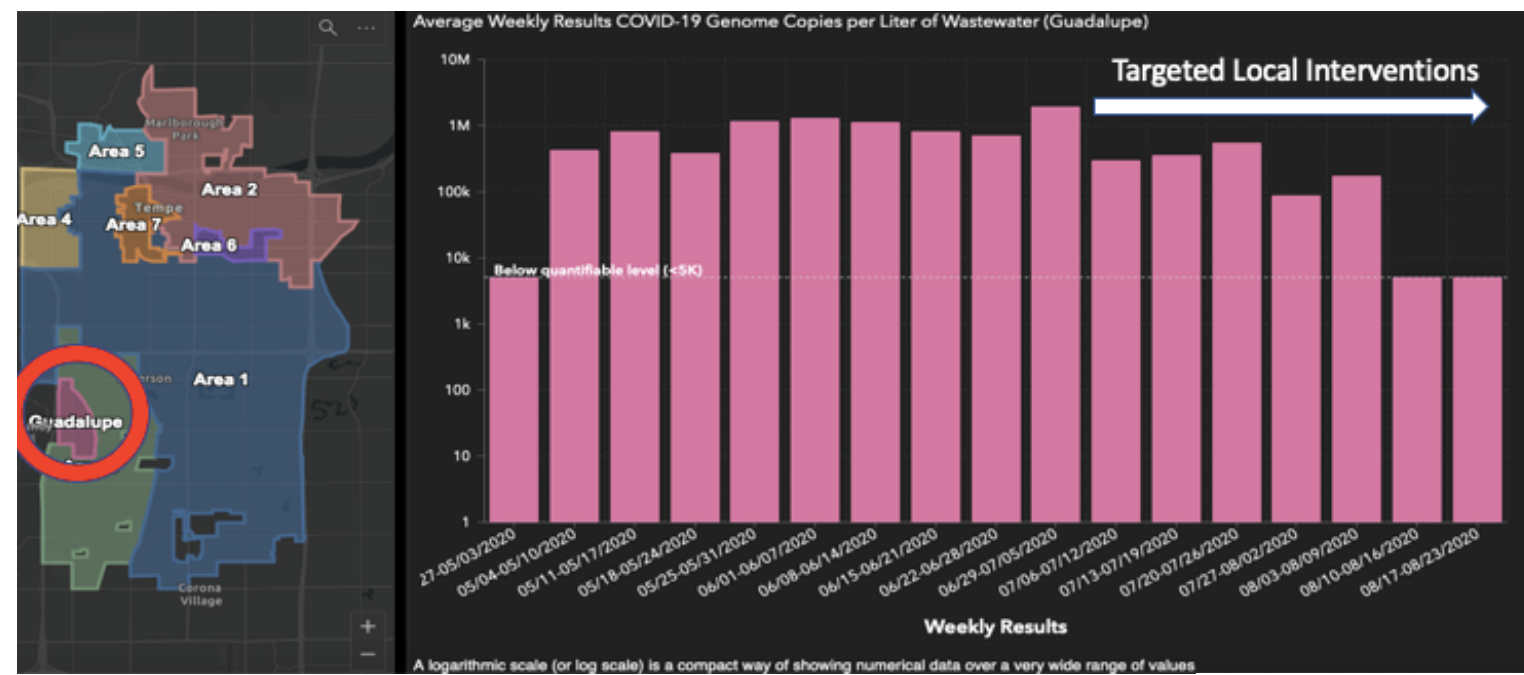




Tempe Wastewater Data vs. Maricopa County Daily New Hospitalization Rate



Defining Success in WBE: Guadalupe, AZ



azcentral.

[AZ Republic, Sept. 5, 2020](#)

- Discuss WBE data trends
- Determine intervention options
- Implement intervention
- Determine impact, using WBE

■ FOR SUBSCRIBERS [TEMPE](#)

Guadalupe slashed its COVID-19 case rate. Here's how the town did it

[Paulina Pineda](#) Arizona Republic

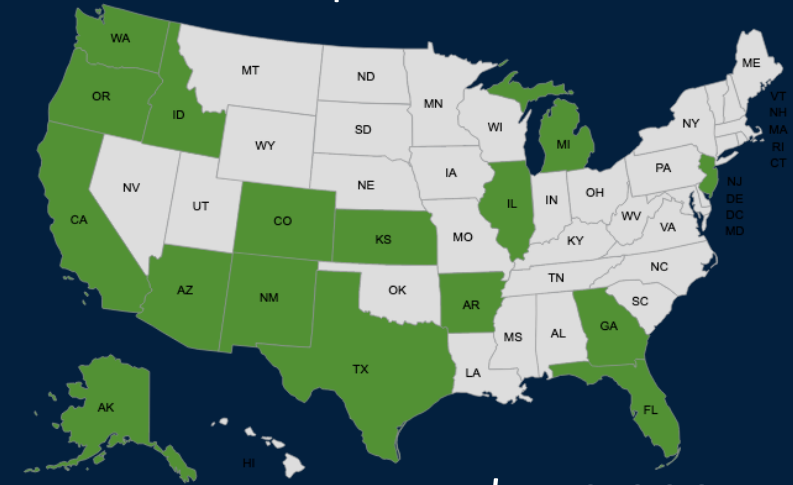
Published 6:00 a.m. MT Sep. 5, 2020 | Updated 7:50 a.m. MT Sep. 5, 2020

ONE WATER HEALTH

***A Nonprofit Project of the ASU Foundation:
“We are dedicated to serve and protect vulnerable
communities and environmental quality”***

STATES ACTIVELY PARTICIPATING IN COVID-19
WASTEWATER TESTING WITH OWOH

<https://onewateronehealth.org/>



\$550,000 Raised



ROLF HALDEN
FOUNDER



DEVIN BOWES
CO-FOUNDER



**NIVEDITA (NIVI)
BIYANI**
CO-FOUNDER



**ALLISON
BINSFELD**
COMMUNITY
ENGAGEMENT
SPECIALIST

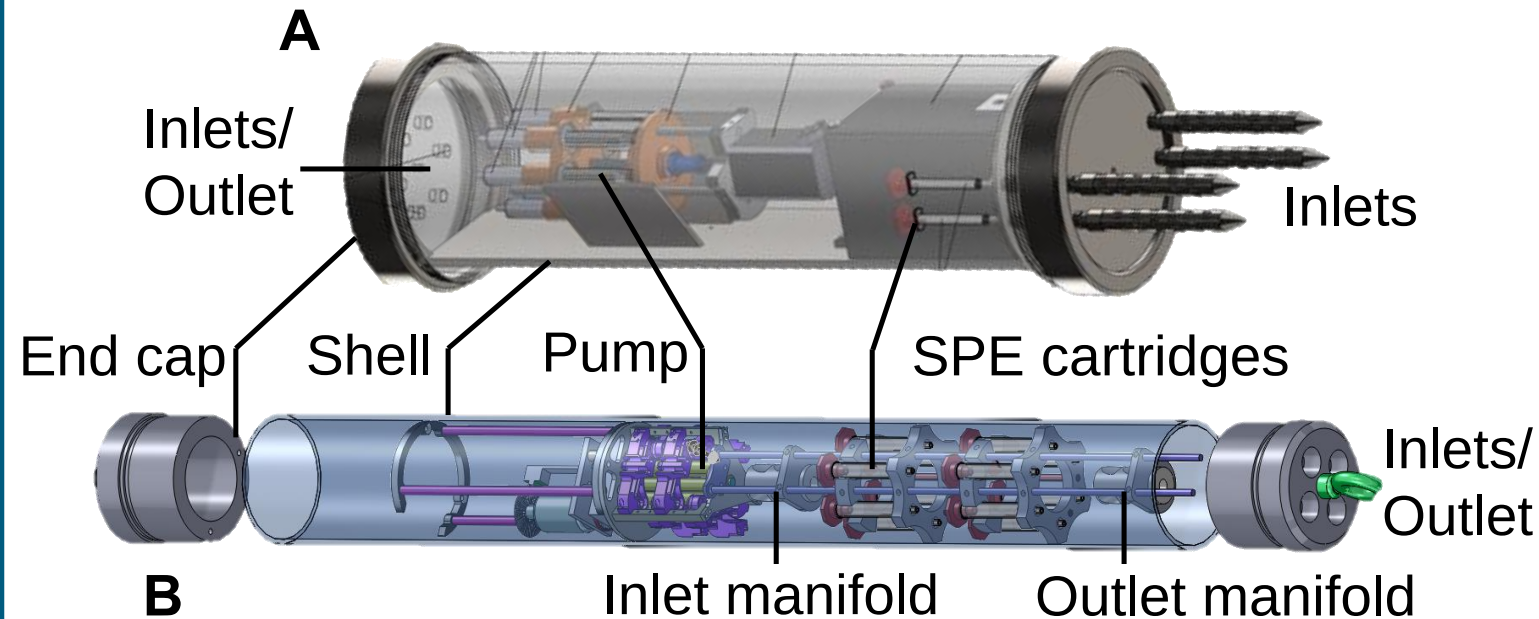


JILLIAN WRIGHT
COMMUNITY
ENGAGEMENT
SPECIALIST



DIANNE PRICE
PUBLIC RELATIONS
& DEVELOPMENT

When the Target Was There – But It's Not in Your Sample...



(e.g., U.S. Patent No. 9341609)

Roll et al. 2016. *Sci. Total Environ.* 556: 45-52.

[PMID: 26971208](#), [PMC4826302](#)

Roll & Halden. 2016. Critical Review. *Water Res.* 94:200-207

[PMID: 26945963](#), [PMC4822337](#)

Adam J. Gushgari, PhD, PE



Conventional Samplers

*Monitor 2-5% of the
Time*

(Near) Continuous

Samplers

Monitor $\geq 95\%$ of the Time



SARS-CoV-2 Wastewater Surveillance NSF Research Coordination Network

<https://bit.ly/3hU5aKy>

*Kickoff Meeting
500+ Live Attendees
September 2nd, 2020*

Future 2020/2021 Seminars, 8AM Pacific Time

October 15

November 1

December 2

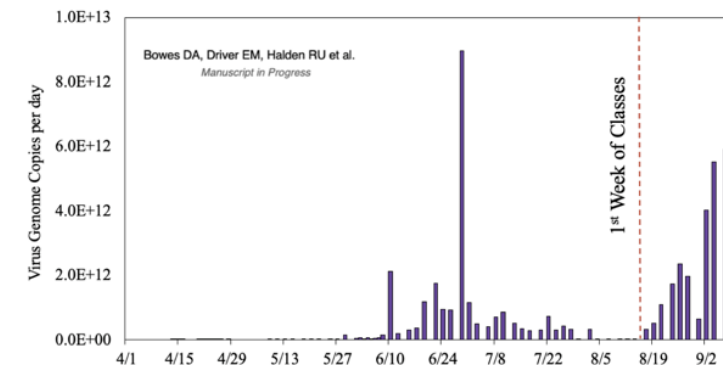
January 6

February 3



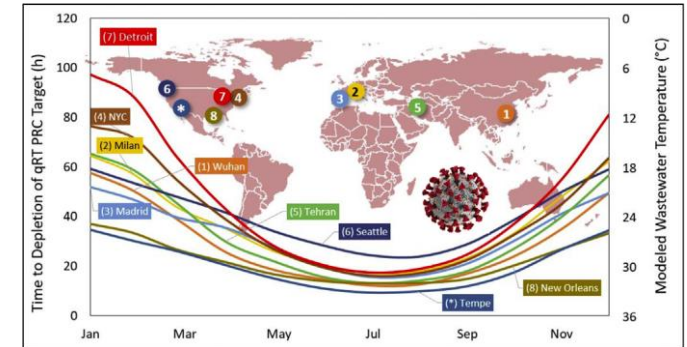
HHO@ASU.EDU

SARS-CoV-2 Monitoring on US Campuses Nationwide
What Are Appropriate and Prudent Data Uses?



Summary of Key Issues

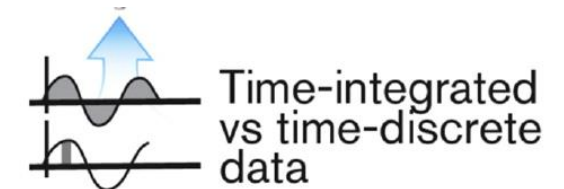
- **Data access & data sharing:**
ethical considerations
- **Data interpretation:**
limited & changing WBE reach
- **Data quality:**
sample types used (grab, composite, continuous)
& analytical assays used



[Science of the Total Environment 730 \(2020\) 138875](#)



[Science of the Total Environment 727 \(2020\) 138406](#)



[Science of the Total Environment 556 \(2016\) 45–52](#)

Acknowledgements

Biodesign Center for Environmental Health Engineering, Arizona State University

Profs. Rolf Halden, Matthew Scotch, Arvind Varsani, Efrem Lim, Brenda Hogue

Drs. Erin Driver, Simona Kraberger, Adam Gushgari; Devin Bowes, LaRinda Holland, Rafaela Fontenele, Nivedita Biyani, Joshua Steele, Varun Kelkar, Sangeet Adhikari, Kathleen Click, Alyssa Carlson, Allison Binsfeld, Sonja Savic, Jillian Wright, Bridger Johnston, Akhil Mahant, Melanie Newell, Dianne Price, AND MANY OTHERS



City of Tempe Staff

Rosa Inchausti: Director, Strategic Management & Diversity

Wydale Holmes: Project Manager & Data Analyst

Dr. Stephanie Deitrick: Enterprise GIS Manager

William Manning: GIS Staff

Richard Dalton: Environmental Compliance Supervisor

Christopher Garcia: Environmental Compliance Specialist

Andrea Glass: Fire Department

Phillip Brown: Civil Engineer

Hillary Cummings: Tempe Community Council Program Director

AND MANY OTHERS

Contact:

rolf.halden@asu.edu



COVID-19 Healthcare Coalition

PPE Demand

Neelima Ramaraju and Taylor Wilkerson

C19HCC Supply Chain

SUPPORTING AN AFFORDABLE AND SCALABLE SUPPLY CHAIN

We're working to increase the supply of critical equipment by building existing capacity, alternative sourcing, and advanced manufacturing solutions. For example, we've identified methods for sterilization and reuse of N95 masks to extend product life and have issued guidance for 3D printing of PPE. The coalition's Demand Allocation model helps state and county leaders track outbreaks and predict demand for PPE.

[FIND MORE](#)



PPE Demand Model [↗](#)

Supply Chain
Marketplace Catalog

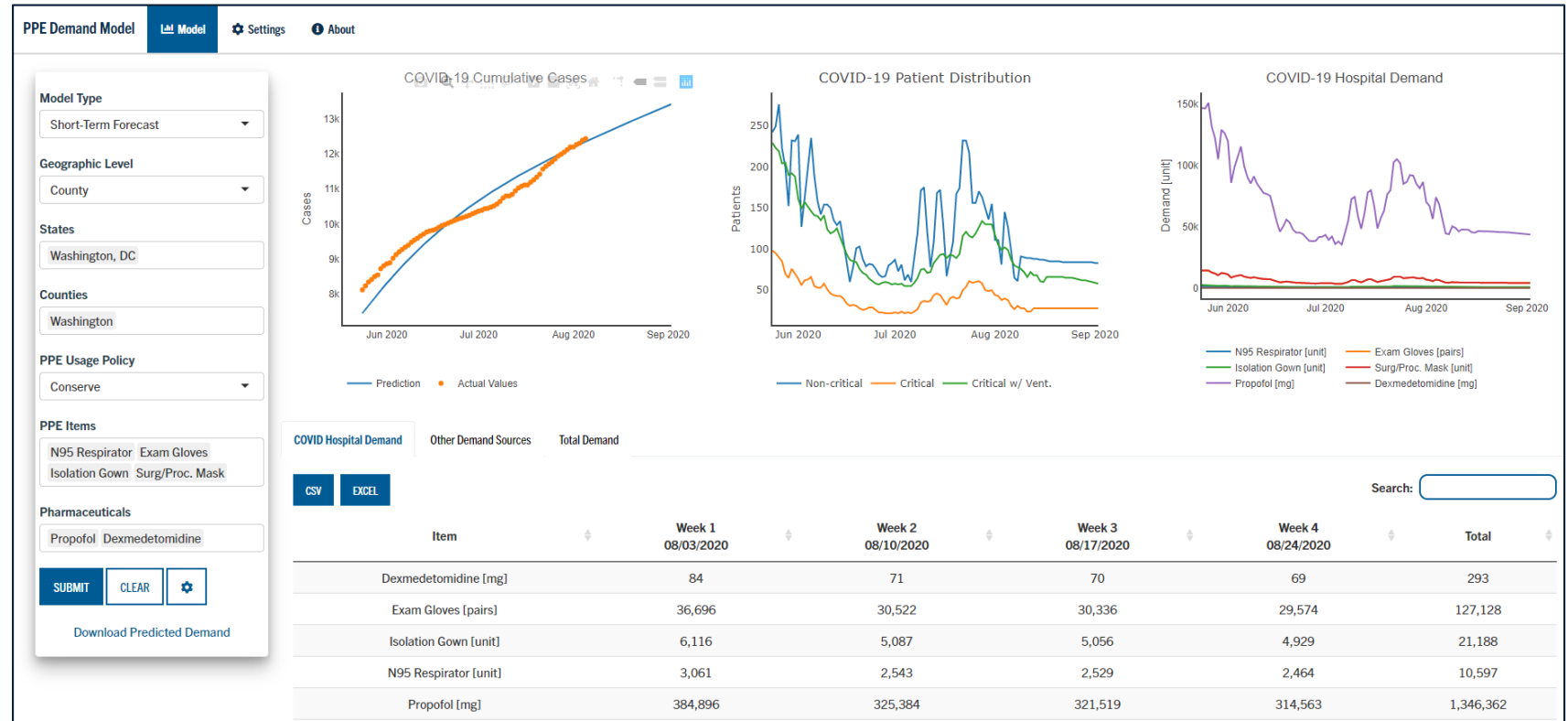
Evaluation of
Decontamination
Techniques for the Reuse
of N95 Respirators

Adapting Snorkel Masks
for Healthcare Settings

COVID-19 Ventilation
Resources

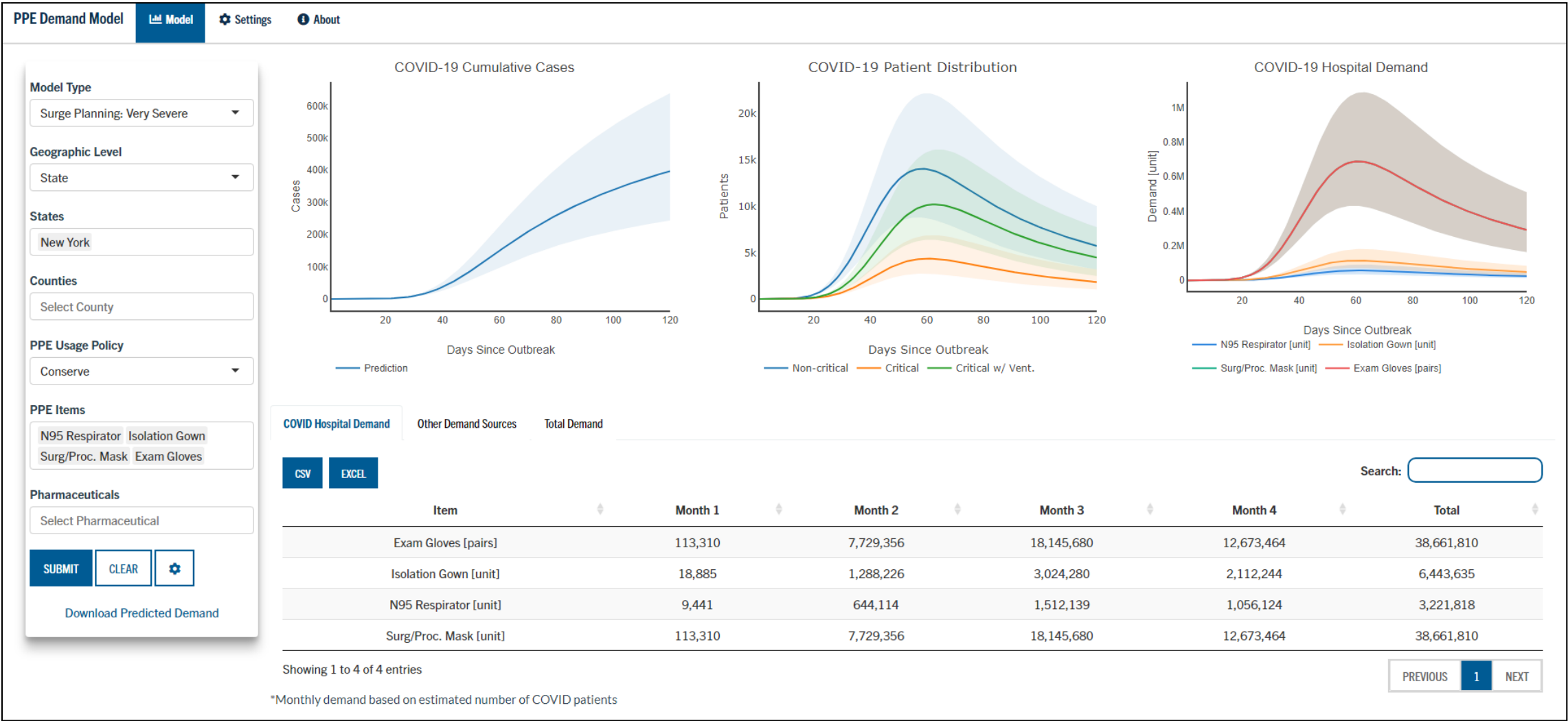
COVID-19 Demand Model

- Uses predicted infection rates to forecast PPE and pharmaceutical use
 - Currently looks at either state or county level
 - Can select multiple states and counties
- Two prediction modes
 - Near term (curve fitting)
 - Surge (SEIR model)
- Several customizable factors



<https://dashboards.c19hcc.org/ppe/>

Surge Scenario Planning



Next Phase White Paper

COVID-19 | Healthcare Coalition

Preparing Supply Chain Operations for the Next Phase of the COVID-19 Response

This paper was written by members of the C19HCC Supply Chain Working Group:

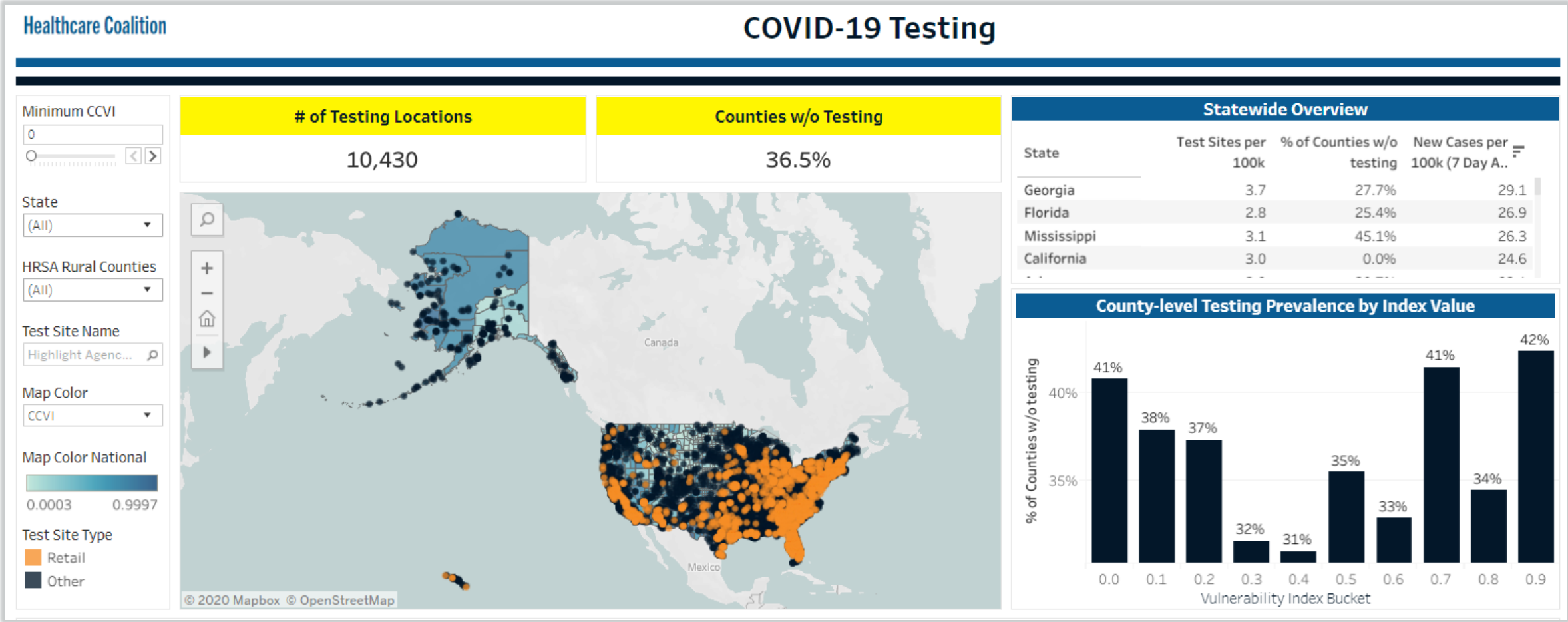
- Global Healthcare Exchange
- LLamasoft
- LMI
- MITRE
- The Center for Supply Chain Research® - Penn State Smeal College of Business
- SMI
- St. Onge Company

The COVID-19 Healthcare Coalition is a collaborative private-industry response to novel coronavirus. Our mission is to save lives by providing real-time learning to preserve healthcare delivery and protect populations. (<https://c19hcc.org>)

May 27, 2020

#	Recommendation	Purpose
1	Create a Command Center	Rapid and informed decision making
2	Take a Systems Approach to the Supply Chain	Holistic view of cost and risks
3	Improve Extended Supply Chain Visibility	Real-time extended event/risk visibility
4	Create a Scenario Plan to Mitigate Risks	Scenario testing to develop robust plan
5	Rethink Demand Planning Processes	More informed demand planning
6	Be Agile	Build your processes and communications flows to facilitate rapid decisions
7	Focus on Key Relationships	Partnerships to enhance your success

Testing Dashboard



<https://testequity.c19hcc.org/>

THANK YOU | QUESTIONS



Sara Alert™ and University Partnerships

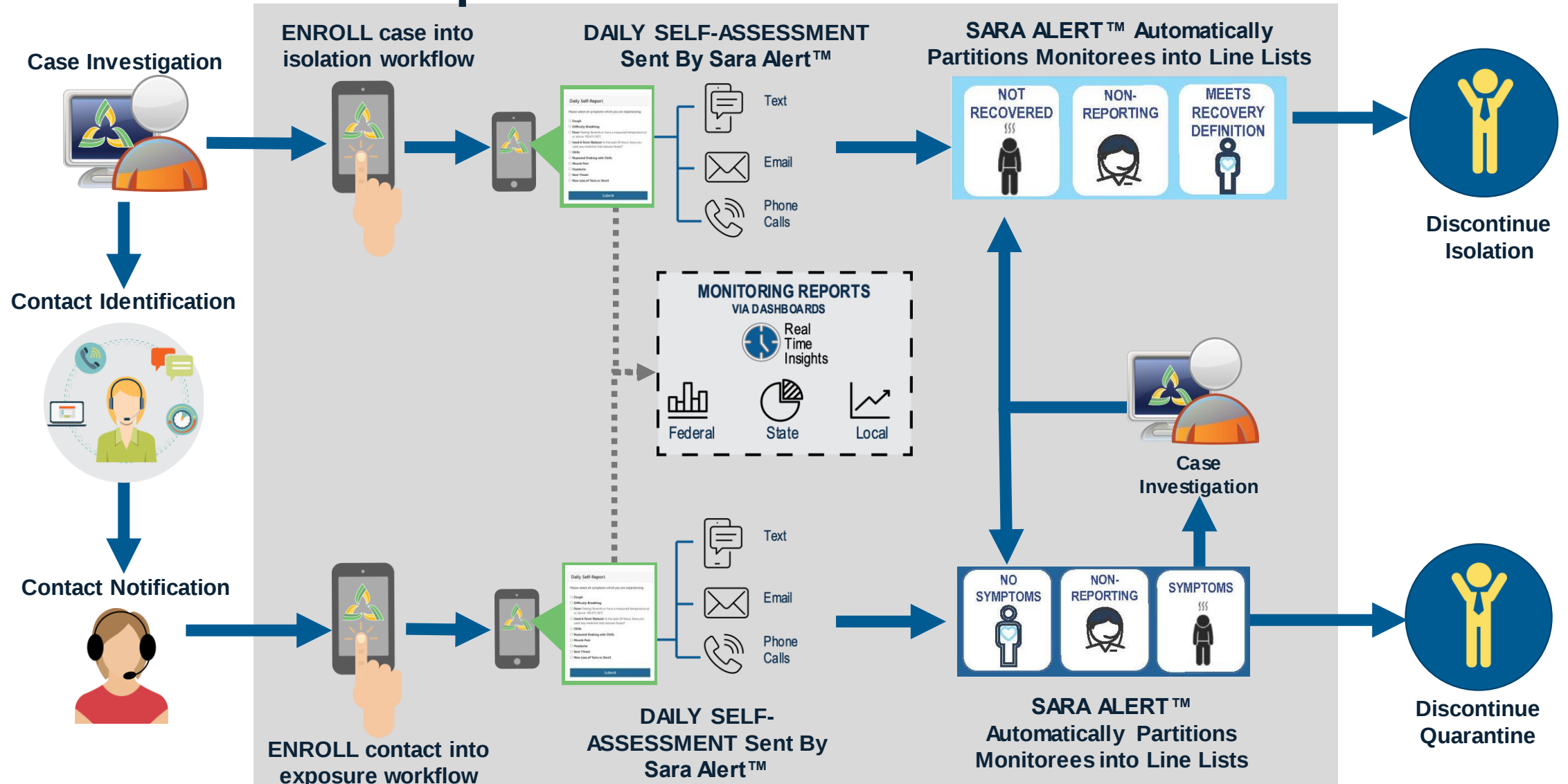


Dr. Paul Jarris, M.D., MBA
Chief Medical Advisor

**Government-University-Industry Research
Roundtable**

MITRE | SOLVING PROBLEMS
FOR A SAFER WORLD™

Automates Monitoring of Exposed And Infected Individuals

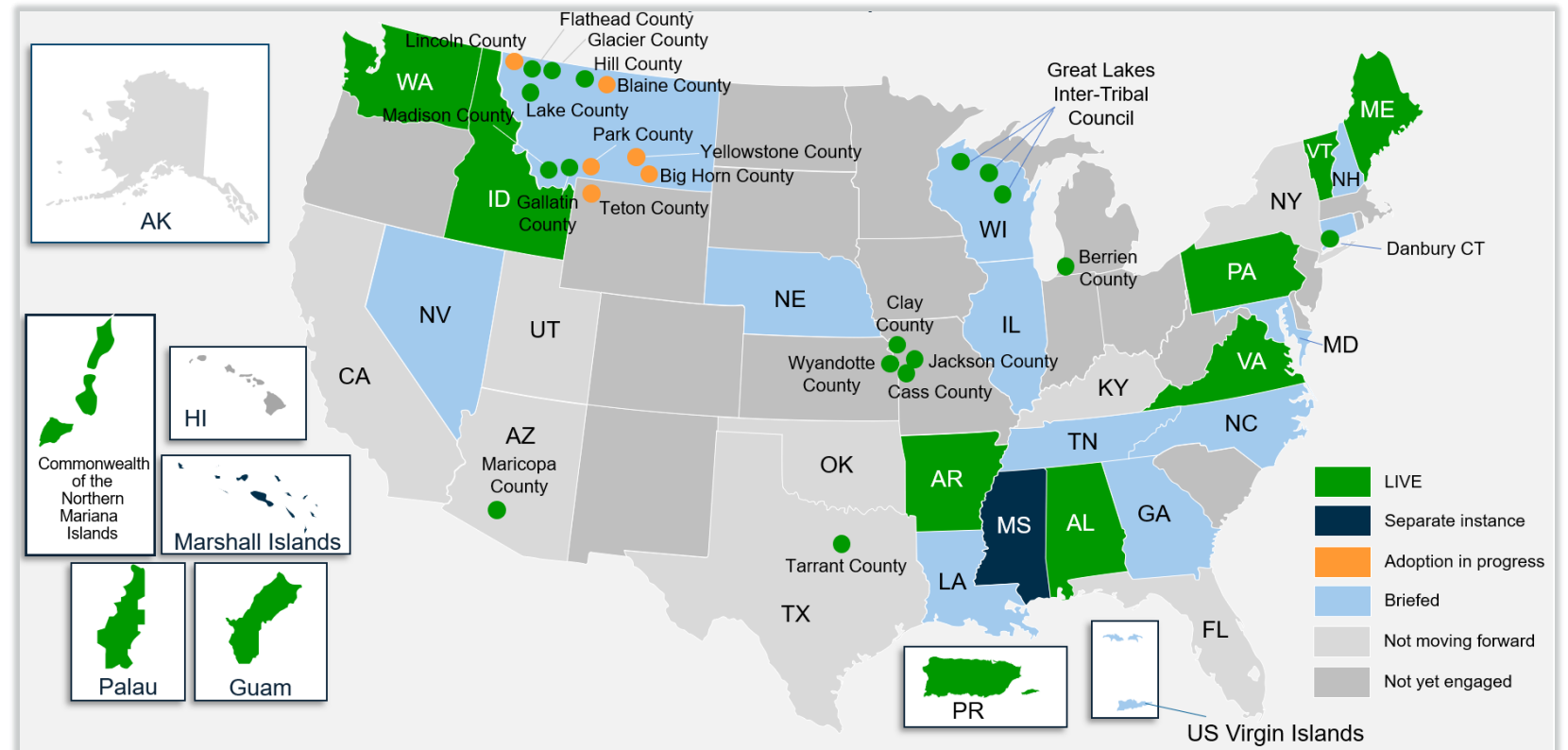


SARA ALERT™ Usage & Adoption

(as of 10/12/2020)

647,356
Total Cumulative
Monitorees
(8% increase from prior
week)

7,351
Public Health
Users
(2% increase from prior
week)



639 Total Jurisdictions including
15 States, **4** Tribes, **3** Territories,
1 Freely Associated State, **over 300** Locals, and more

Academic Options for Sara Alert™



Public Health

- An academic institution may be established as a sub-jurisdiction **under the direction of current public health Sara Alert™ user jurisdiction**
- Currently in use by 29 universities at 54 campuses through their public health agencies



Academic

- Oak Ridge Associated Universities (ORAU) and The MITRE Corporation are partnering to pilot and deploy Sara Alert™ Academic
- This separate instance is **tailored specifically for the university setting**
- Universities will be able to subscribe to **Sara Alert™ Academic** (currently in pilot phase)



GitHub Open Source Code

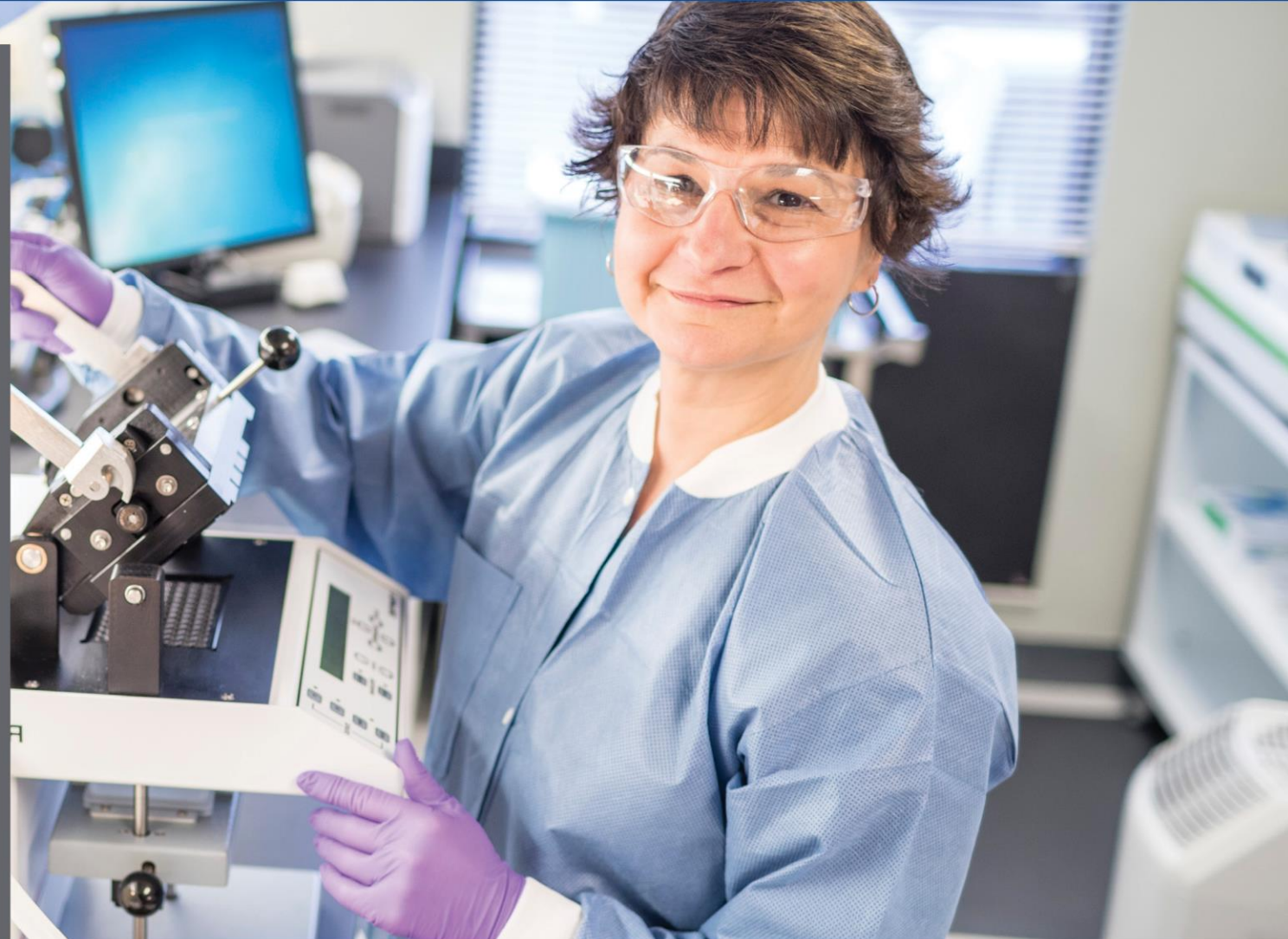
- The **open source code** is available for download on GitHub per the Apache 2.0 license (<https://github.com/SaraAlert/SaraAlert>)
- Please **contribute** upgrades and bug fixes to the GitHub repository



Government-University- Industry Research Roundtable

October 15, 2020

Kenneth W. Tobin, Ph.D.
Vice President, SRO
Research and University
Partnerships





Secure Health Monitoring and Reporting for Universities



Sara AlertTM
Academic

- **Directly enroll** confirmed or suspected COVID-19 positive students, faculty, and staff
- Enrollees **report their symptoms daily** using a variety of methods. Data is accessible in near real-time, providing comprehensive situational awareness
- Customized for universities to **accommodate differing needs** from Public Health departments
- Universities have complete **control over their data** and who sees it
- Data can be **exported and quickly reported** to public health
- Sara AlertTM Academic is a stand-alone instance **available to all universities** and is not tied to a public health jurisdiction
- ORAU and MITRE have a proven record of **supporting our university partners**
- Universities have the opportunity to share lessons learned, and innovations in source code through the **ORAU-created network** of universities
- Sara AlertTM Academic **leverages the existing Sara AlertTM** source code, security protocols, data use policy, and help desk support model

For more information contact: info@saraalertacademic.org