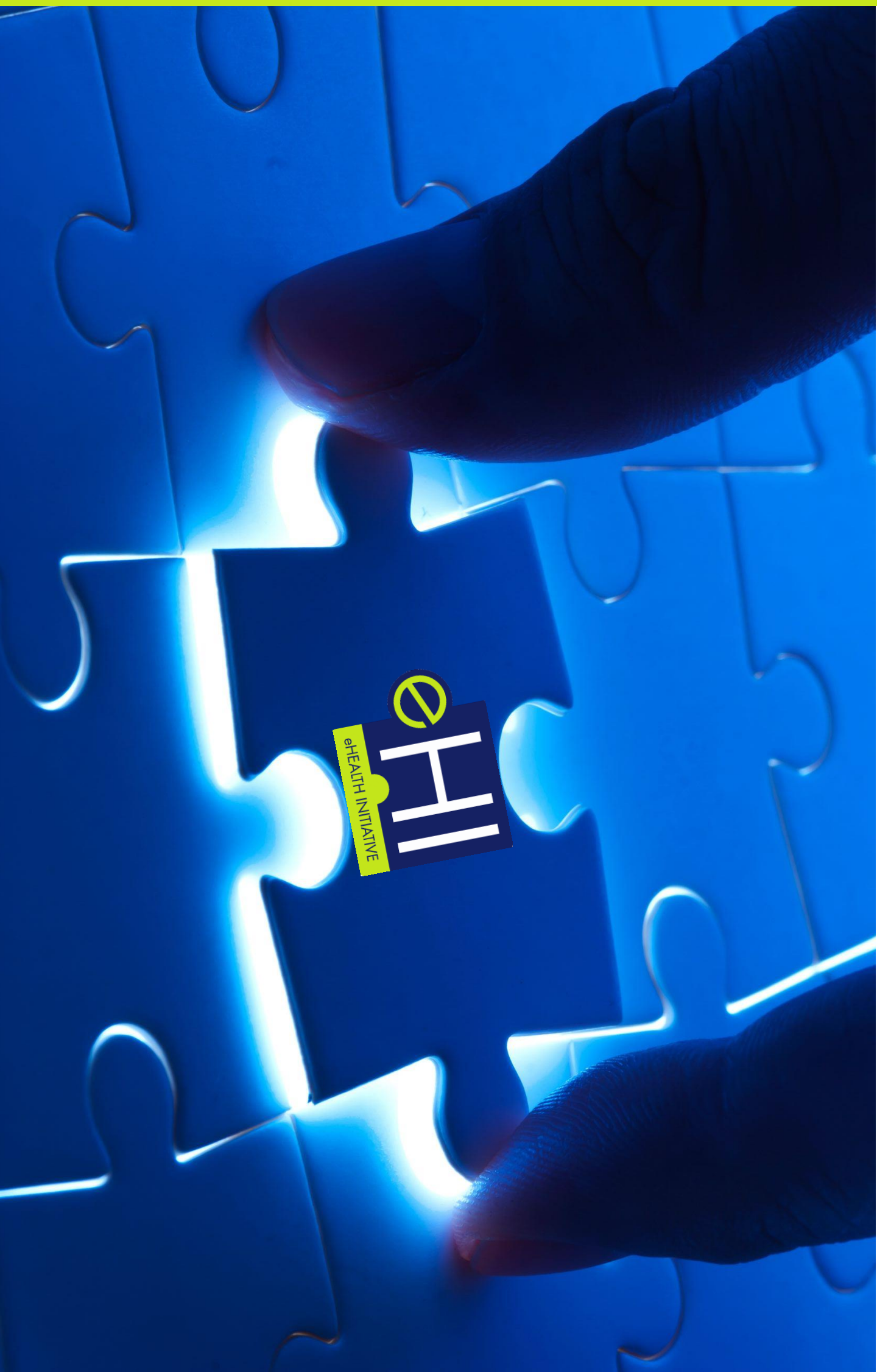
eHEALTH INITIATIVE



Coronavirus: Can Artificial Intelligence Make A Difference?

March 26, 2020

eHEALTH INITIATIVE

Agenda

Welcome and Introductions

- **Jennifer Covich Bordenick**, CEO, eHealth Initiative and Foundation

Presenters

- **John Frownfelter, MD,** Chief Medical Information Officer, Jvion
- **Priyanka Surio**, Director of Informatics, ASTHO
- **Lori Tremmel Freeman,** Chief Executive Officer, NACCHO
- **John Showalter, MD,** Chief Product Officer, Jvion

Today's Speakers

John Frownfelter, MD
Chief Medical Information Officer, Jvion

Priyanka Surio
Director of Informatics, ASTHO

Lori Tremmel Freeman
Chief Executive Officer, NACCHO

John Showalter, MD
Chief Product Officer, Jvion

Housekeeping

- **All participants are muted**
- Use the **Q&A** box to ask a question related to the presentation
- Use the chat box is for *technical difficulties* and other questions / comments

Presentation slides are in the eHI resource Center
https://www.ehidc.org/resources

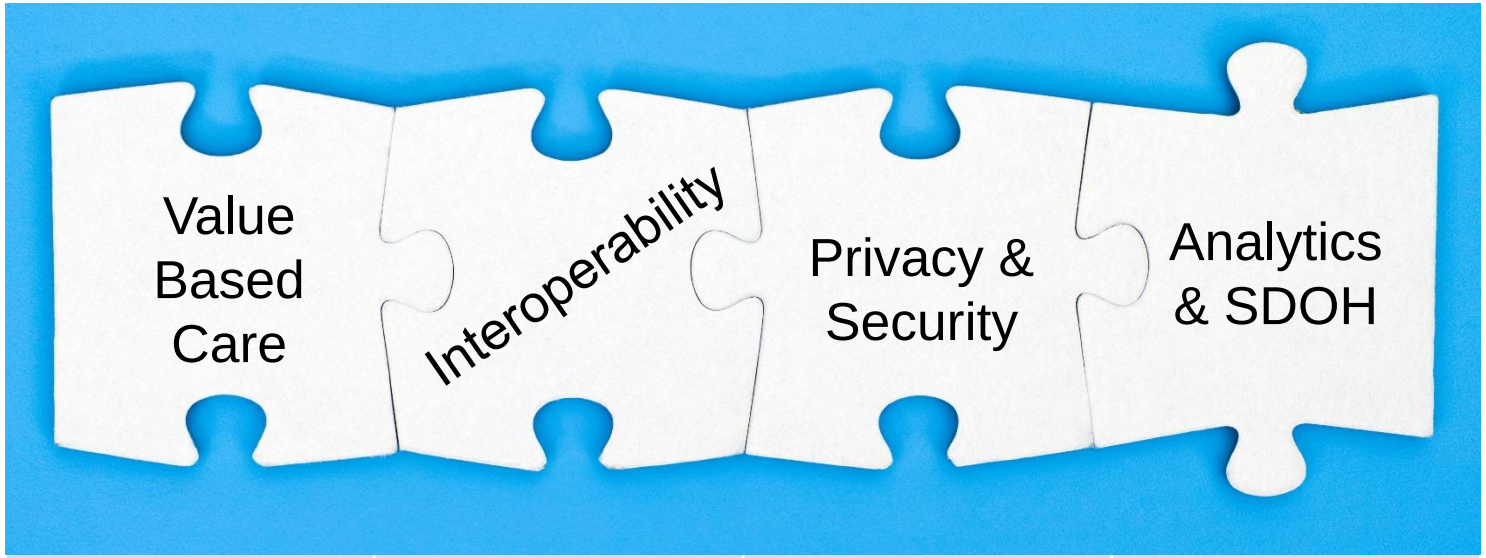
eHEALTH INITIATIVE

eHI Leadership Council

eHI's Mission

To serve as the industry leader in **convening executives** and multi-stakeholder groups to **identify best practices** that **transform healthcare** through the use of t**echnology and innovation**

Current Areas of Focus



Cost Transparency	Understanding FHIR / APIs / Da Vinci	Protection vs. Access	Non-traditional data sources
Prior Authorization	Policy	HIPAA Part 2	SDOH & PGHD
	Workflow	Cybersecurity	EHR Data for Clinical trials
	Info Blocking	Medical Device Security	

eHEALTH INITIATIVE

- **March 31**- Rapidly Deployed Remote Monitoring for COVID-19
- **April 7**- Telehealth during COVID-19: New strategies on how physicians are addressing the outbreak.
- **April 9 -** COVID-19 - Six Things Organizations Should Be Considering **–** but might not be
- **April 23 –** COVID-19 - Billing for Telehealth Services

eHEALTH INITIATIVE

COVID: Can AI help?

March 26, 2020

jvion

About Us

Background:

✓ More than a decade in the industry

Technology that Matters:

✓ A solution that precisely and comprehensively foresees risk and provides individualized recommended actions that drive better outcomes

Awards:

✓ 2019 KLAS Recognition
✓ "Outstanding AI solution for 2019" by BlackBook Research
✓ "Top Innovator in Healthcare" by Accenture out of a 700 company international competition

Vision:

The value with JVION is tied to the lives we save and the health outcomes we improve.

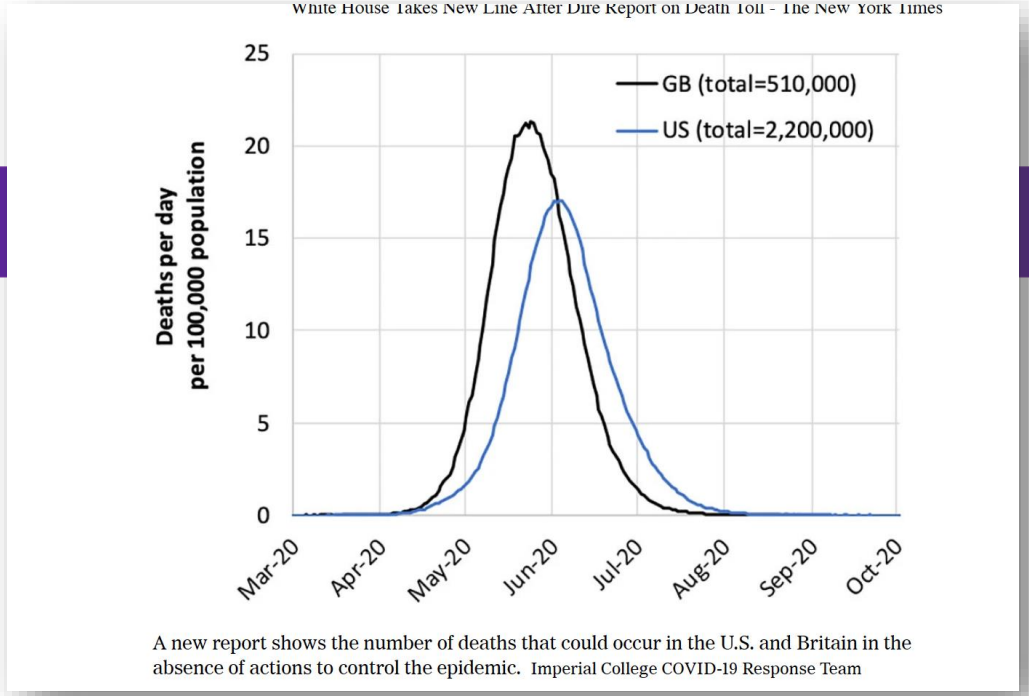
Mission:

Prevent avoidable patient harm

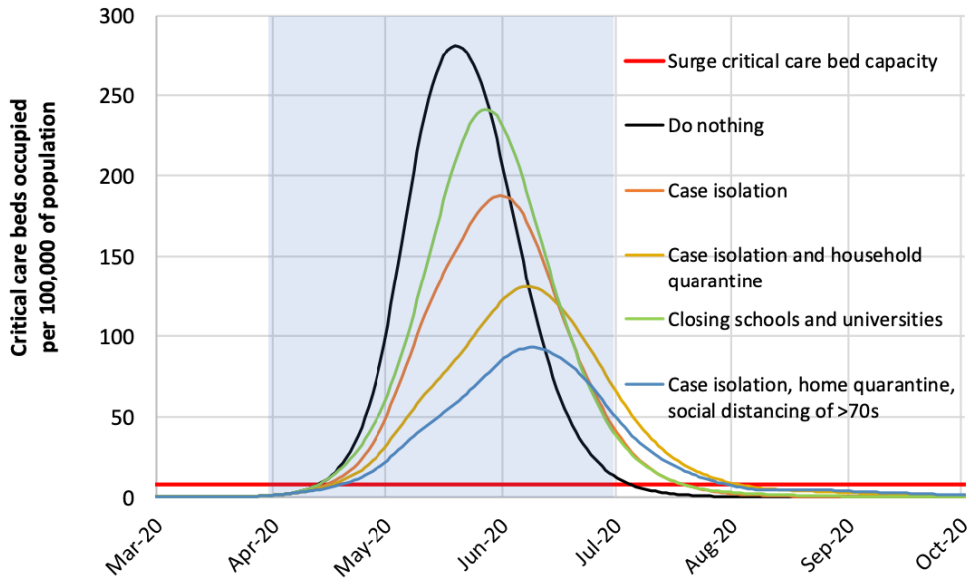
Clients:

✓ Serving more than 3000 hospital throughout the U.S.
✓ Greater than 3.4M patient lives improved by JVION'S clinical-AI

15/100k = 49,500/day Deaths if the curve is not flattened



A new report shows the number of deaths that could occur in the U.S. and Britain in the absence of actions to control the epidemic. Imperial College COVID-19 Response Team



The predicted impact that countermeasures could have on critical care bed use in Britain. Imperial College COVID-19 Response Team

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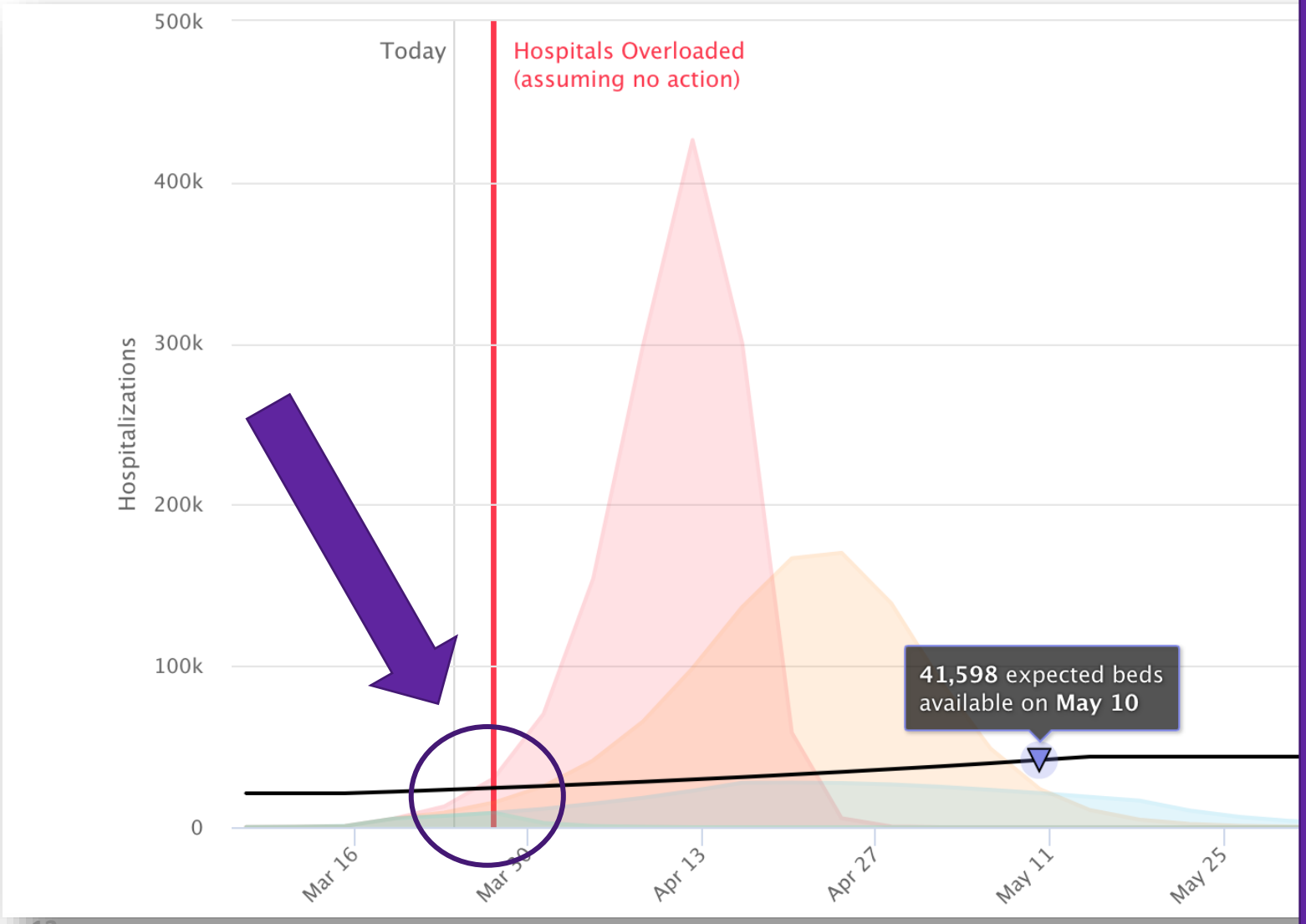
One State's Modeling Projections



Providers:

- Anticipate patient "surge" coming in the next 2-8 weeks
- Scrambling to predict volume demands amid supply shortages
- Facing ethical questions around triage– both upon admission and updated daily mortality risk

Payers:

- Anticipate significant member morbidity and mortality
- Can leverage resources to engage with members on specific initiatives
- Are familiar with standing up programs and interventions (i.e., service delivery, transportation, etc.)

Public Health:

- Public health emergency strategies need to account for disparities and influencing factors to roll out effective responses

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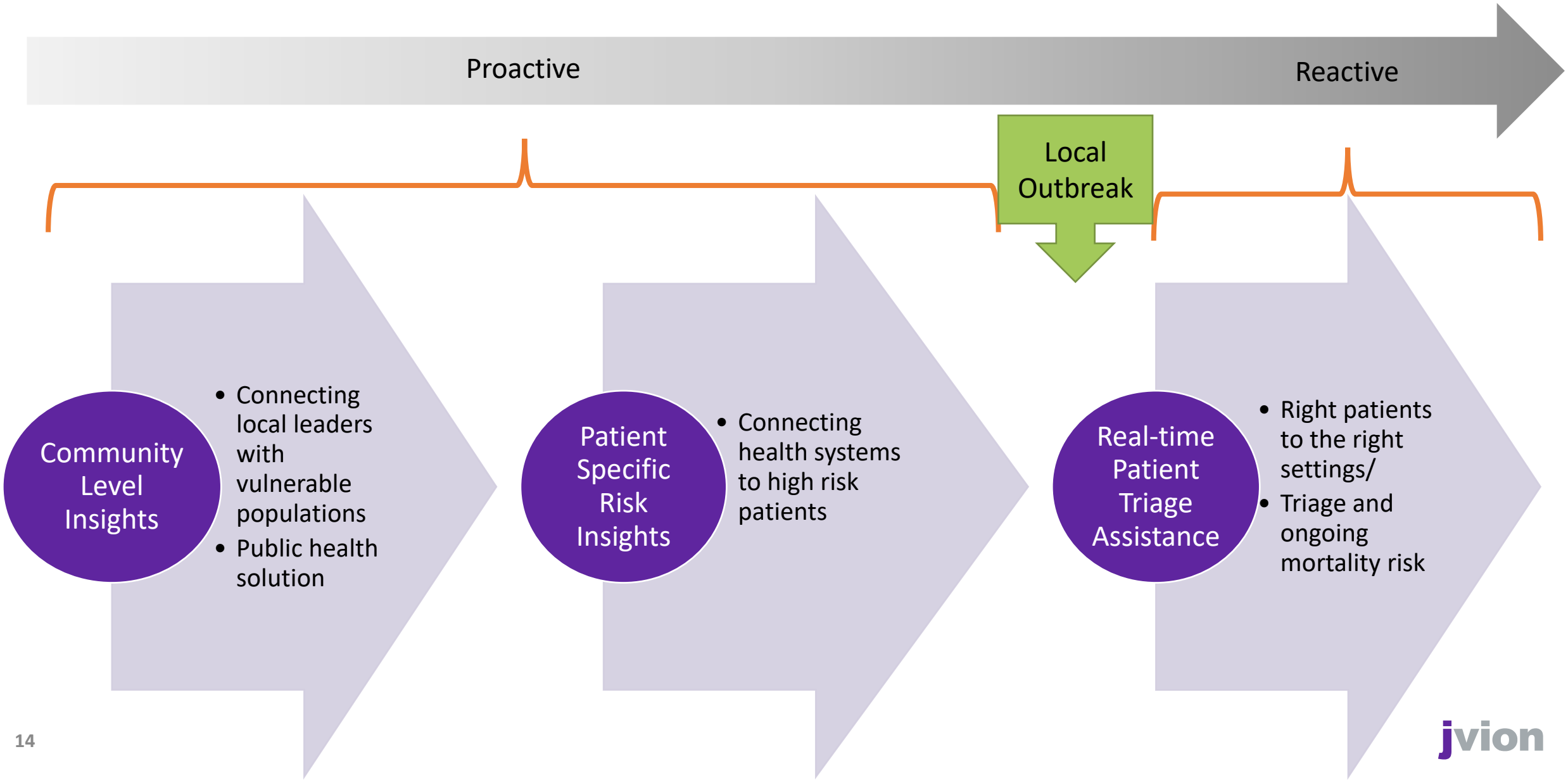
Connecting Solution Development to Impact



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State/Territorial Health Agencies' COVID-19 Response & Leadership

Priyanka Surio, MPH, PMP, CHES
Director, Data Analytics & Public Health Informatics
Co-Lead, ASTHO COVID-19 Data Management & Surveillance Taskforce

March 25, 2020

VISION

State and territorial health agencies advancing health equity and optimal health for all.

MISSION

To support, equip, and advocate for state and territorial health officials in their work of advancing the public's health and well-being.

ASTHO's Data Analytics and Public Health Informatics team has been pulled into ASTHO's Incident Command Structure (ICS) to lead our COVID-19 data management and surveillance response efforts.

- Conducting routine policy surveillance
-  Mapping key data points on our States & Territories in Action: COVID-19 Response Map
- Supporting a national data sharing effort through the COVID-19 syndromic surveillance collaborative project with CDC
- Engaging with external partners to scope out new tools/technologies (e.g., Hackathons)
- Providing internal data management through an ASTHO developed information resource tool
- Offering technical assistance and research for state/territorial health officials and their leadership staff

We'd like to connect with healthcare partners and the health IT industry to determine where our efforts overlap and how we can improve our communications, share information, and co-develop resources.

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COVID-19 Syndromic Surveillance Collaborative Project

SHO's lead on national data sharing with CDC during a pandemic

National data sharing effort between CDC and states that participate in the National Syndromic Surveillance Program (NSSP) to share de-identified emergency department (ED) visits associated with COVID-19, develop syndrome definitions, support active case finding, and track spatial and temporal trends

Why?

- **Timely, broad, consistent, and quality data sharing** is necessary for emergency response
- Sharing states' ED visit data can improve syndrome definitions and establish improved methods for **tracking COVID-19 related ED visits**
- **No additional data burden** on jurisdictions participating. ED and urgent care data is already on the platform and can be accessed by NSSP with permission
- Follows **NSSSP Data Use Agreement** for access, sharing, and use of data
- Resulting publications or data dissemination will appropriately **credit health agencies** and will not be displayed without approval

Use Case of EVALI Surveillance

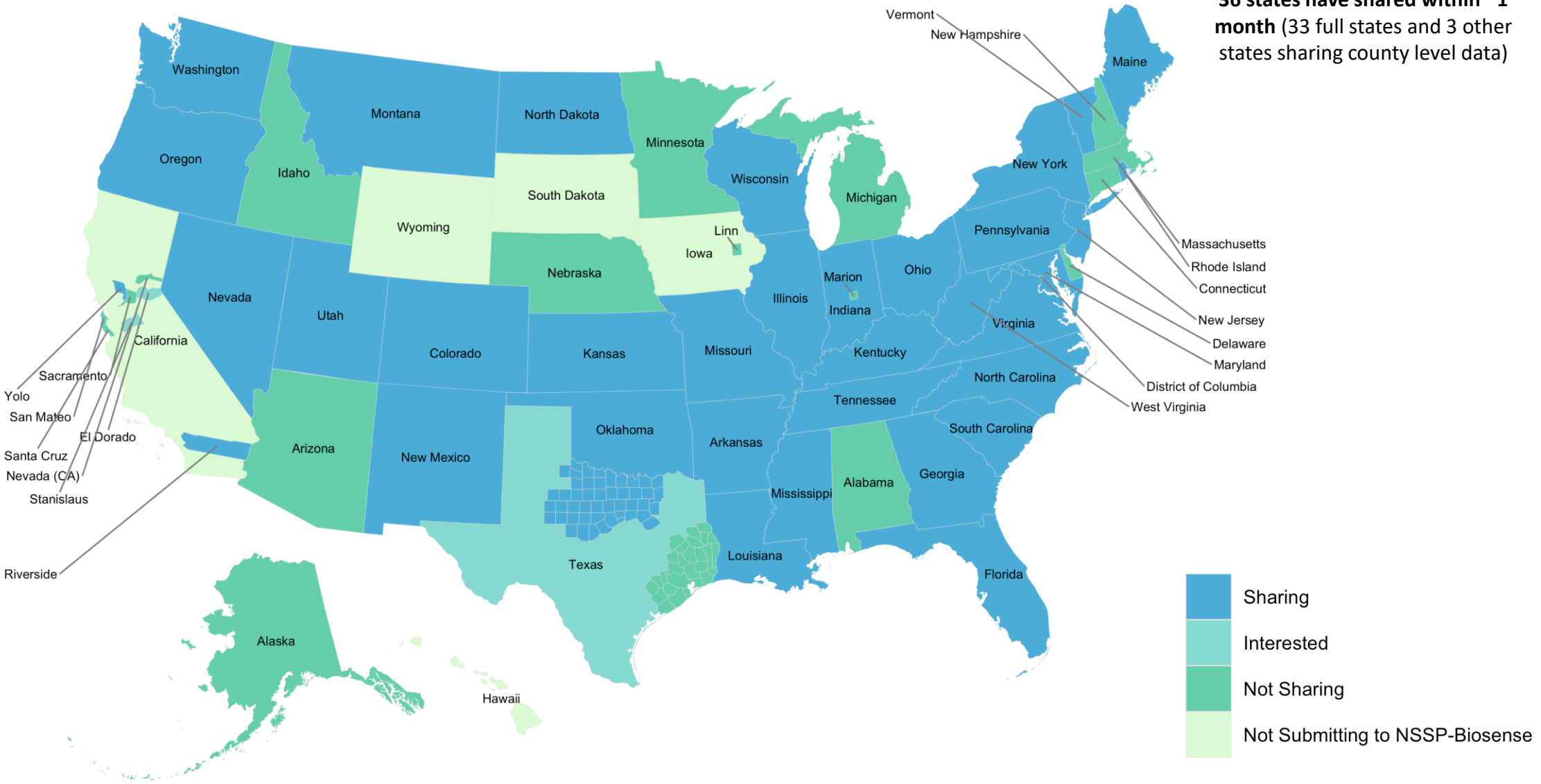
- Similar level of collaboration was done with **12 states over several months** as part of the EVALI (lung injury due to vaping) response
- Collaborations between states and CDC helpful but **often delayed as states determined their data sharing capabilities**

Call to Action

- As a result of the barriers with EVALI data sharing, CDC reached out to national partners (ASTHO) to support a **SHO-led national data sharing** effort for COVID-19 response
- **All states participating in NSSP** can contribute towards this national data sharing effort
- ASTHO to support SHOs by **addressing concerns and removing barriers** so they can grant approval to share syndromic surveillance data with CDC
- ASTHO to liaise with CDC to ensure **SHO perspectives are considered** in how the data is used and shared

COVID19 Data Sharing - NSSP ESSENCE

36 states have shared within ~1 month (33 full states and 3 other states sharing county level data)



States & Territories in Action: COVID-19 Response ArcGIS Map Live Demo

DataCite Citation
ASTHO. March 23, 2020. States & Territories in Action: COVID-19 Response. Version 1.0. Esri ArcGIS Map. https://www.astho.org/COVID-19/.

States & Territories in Action: COVID-19 Response
Originally published on: https://www.astho.org/COVID-19/

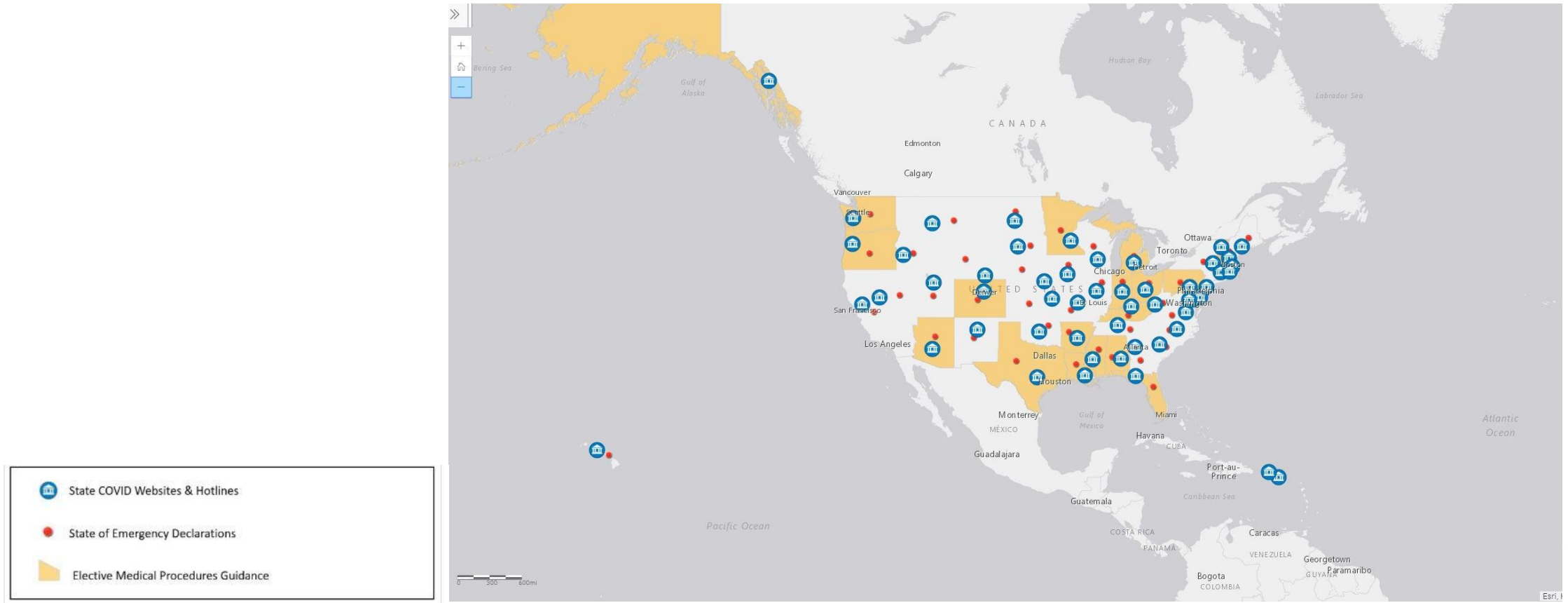
Last modified: March 25, 2020

Workbook details: 3 attribute tables in ArcGis

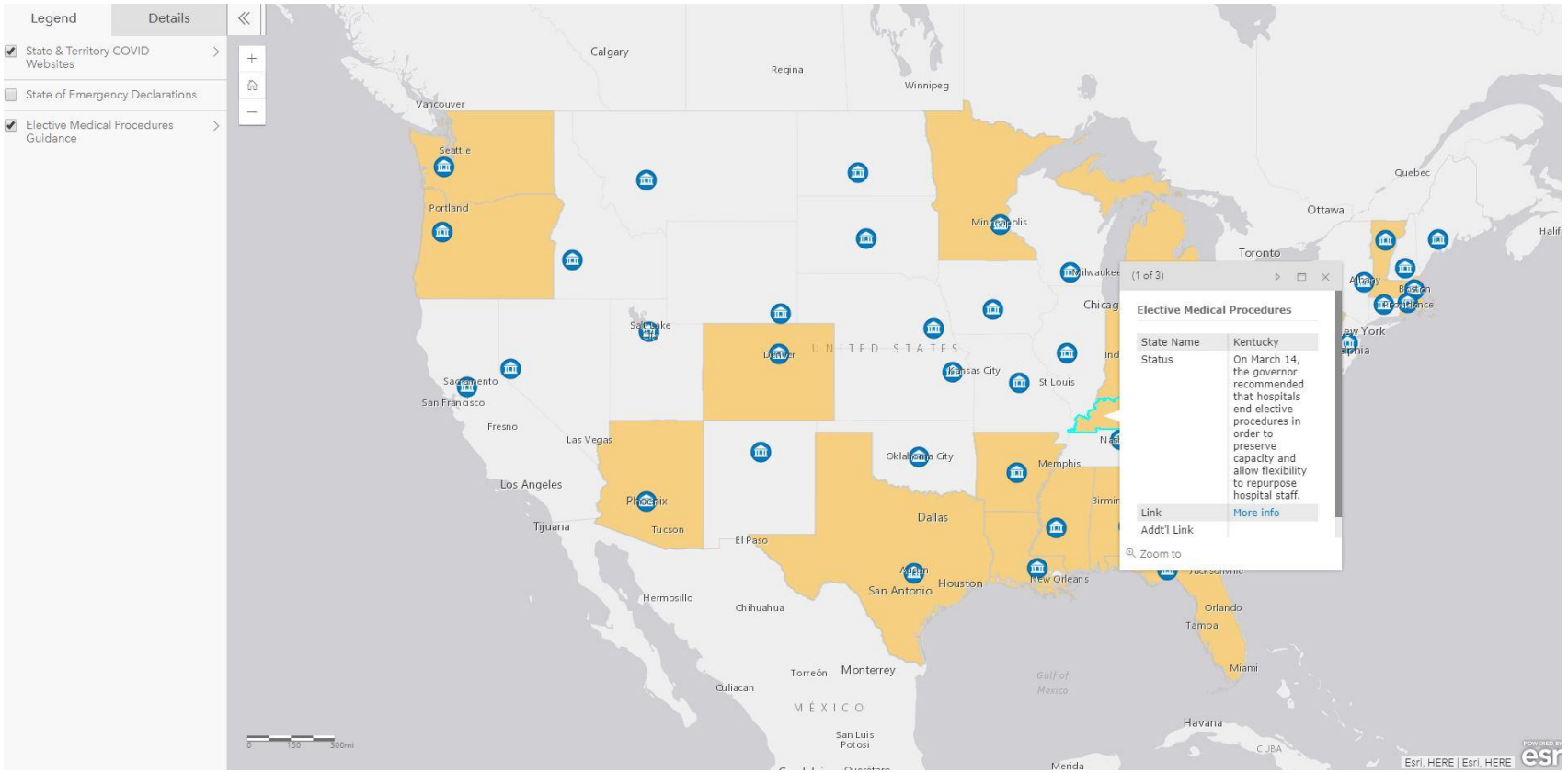
Original author: ASTHO

Emergency Declarations: Important Public Health Policy Tools

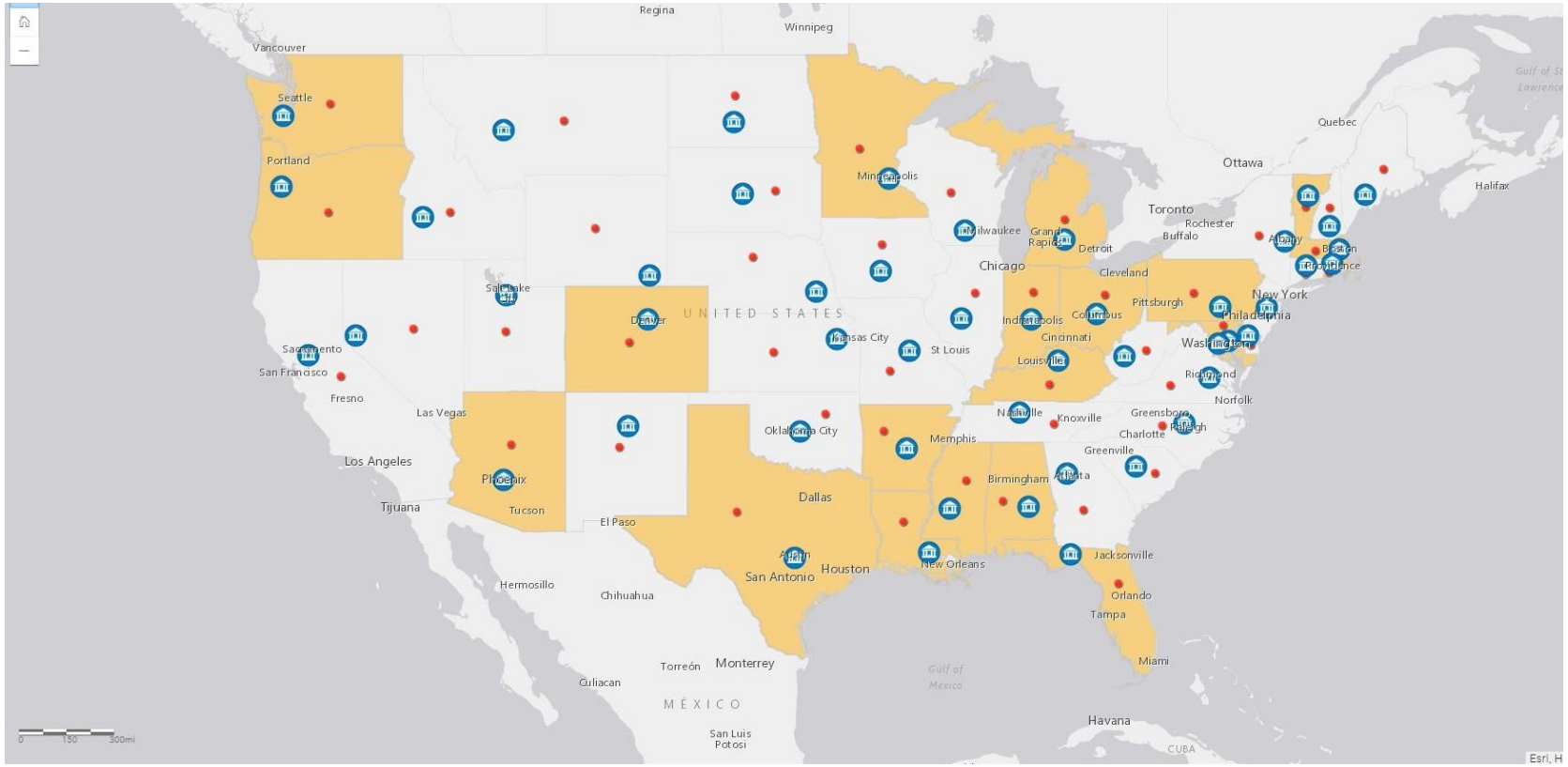
States & Territories in Action: COVID-19 Response

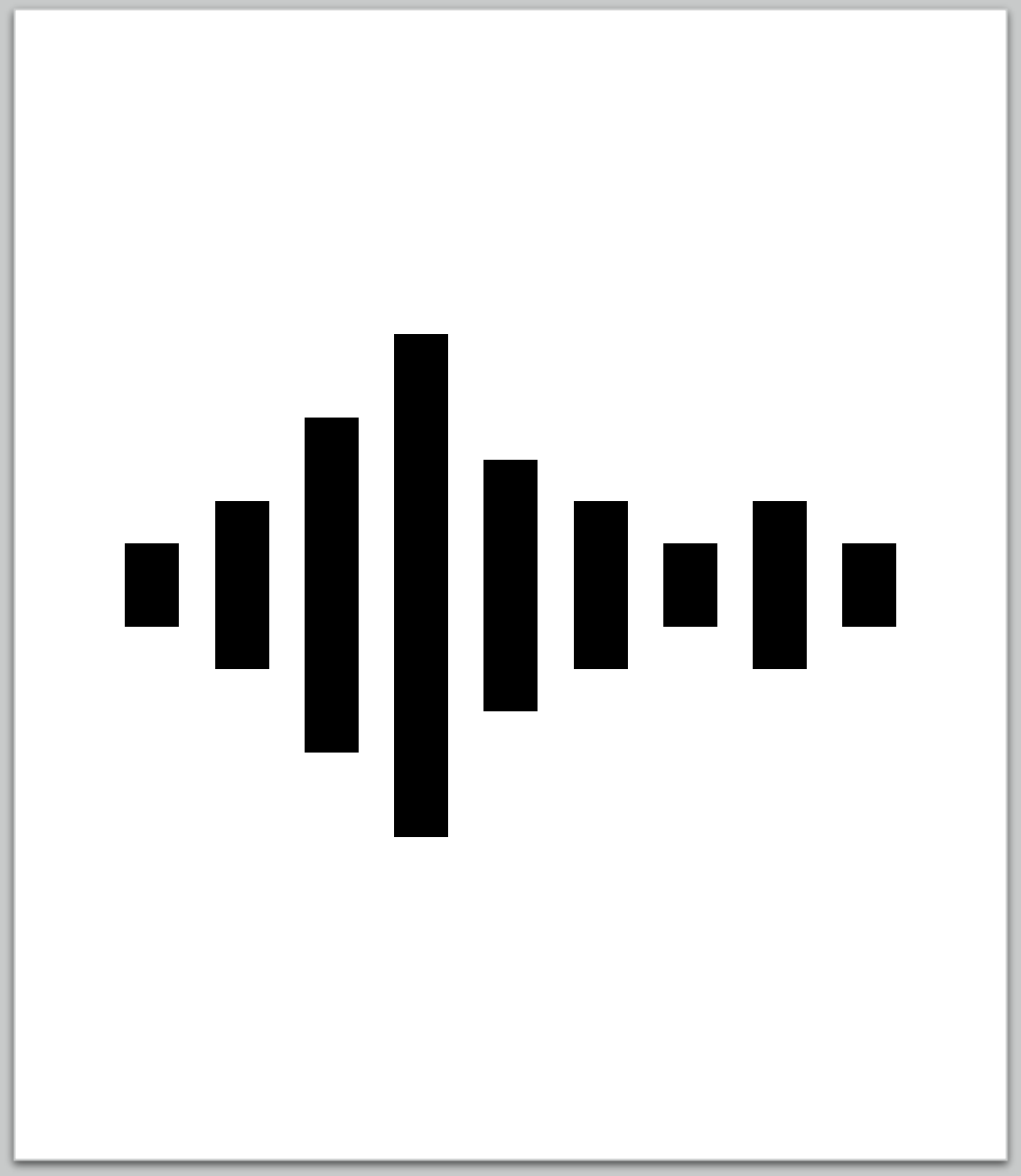


States & Territories in Action: COVID-19 Response



States & Territories in Action: COVID-19 Response





Questions/ Feedback

Contact:
psurio@astho.org

To share resources:
preparedness@astho.org

ASTHO COVID-19 Website:
https://www.astho.org/COVID-19/

The Promise and the Potential for Artificial Intelligence at Local Health Departments Across the U.S.

Coronavirus – Can AI Make a Difference?

eHealth Initiative and Foundation Webinar

March 25, 2020

Lori Tremmel Freeman, MBA
Chief Executive Officer, NACCHO

NACCHO
National Association of County & City Health Officials

What is NACCHO

NACCHO
National Association of County & City Health Officials

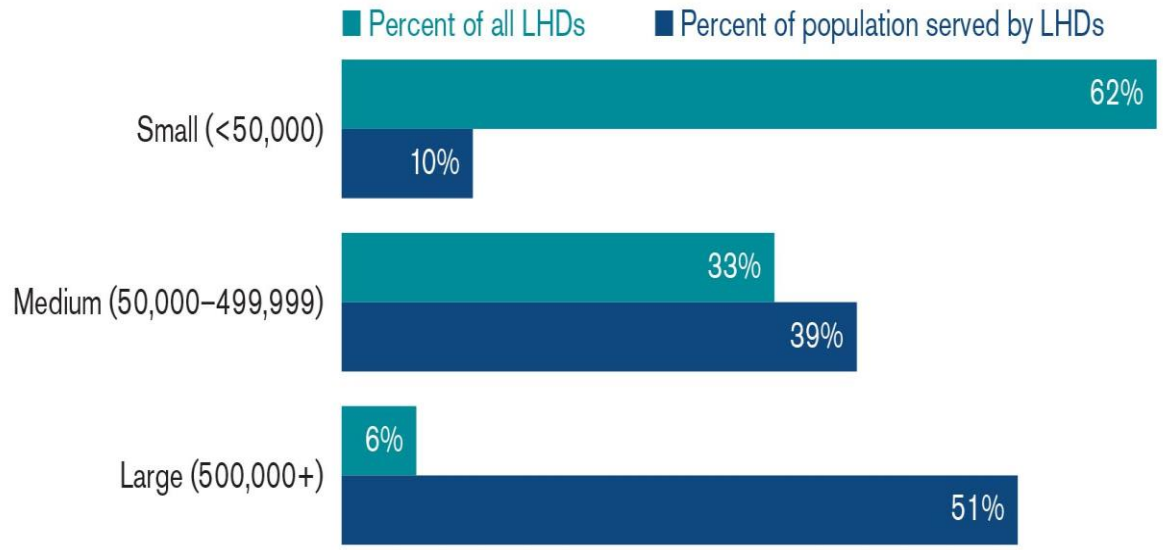
NACCHO is the **only** organization dedicated to **serving every local health department** in the nation. NACCHO serves 3000 local health departments and is the leader in providing cutting-edge, **skill-building**, professional **resources and programs**, seeking **health equity**, and supporting **effective** local public health **practice and systems**.

** Pronounced: NAY-cho*

The Local Public Health Landscape

NACCHO
National Association of County & City Health Officials

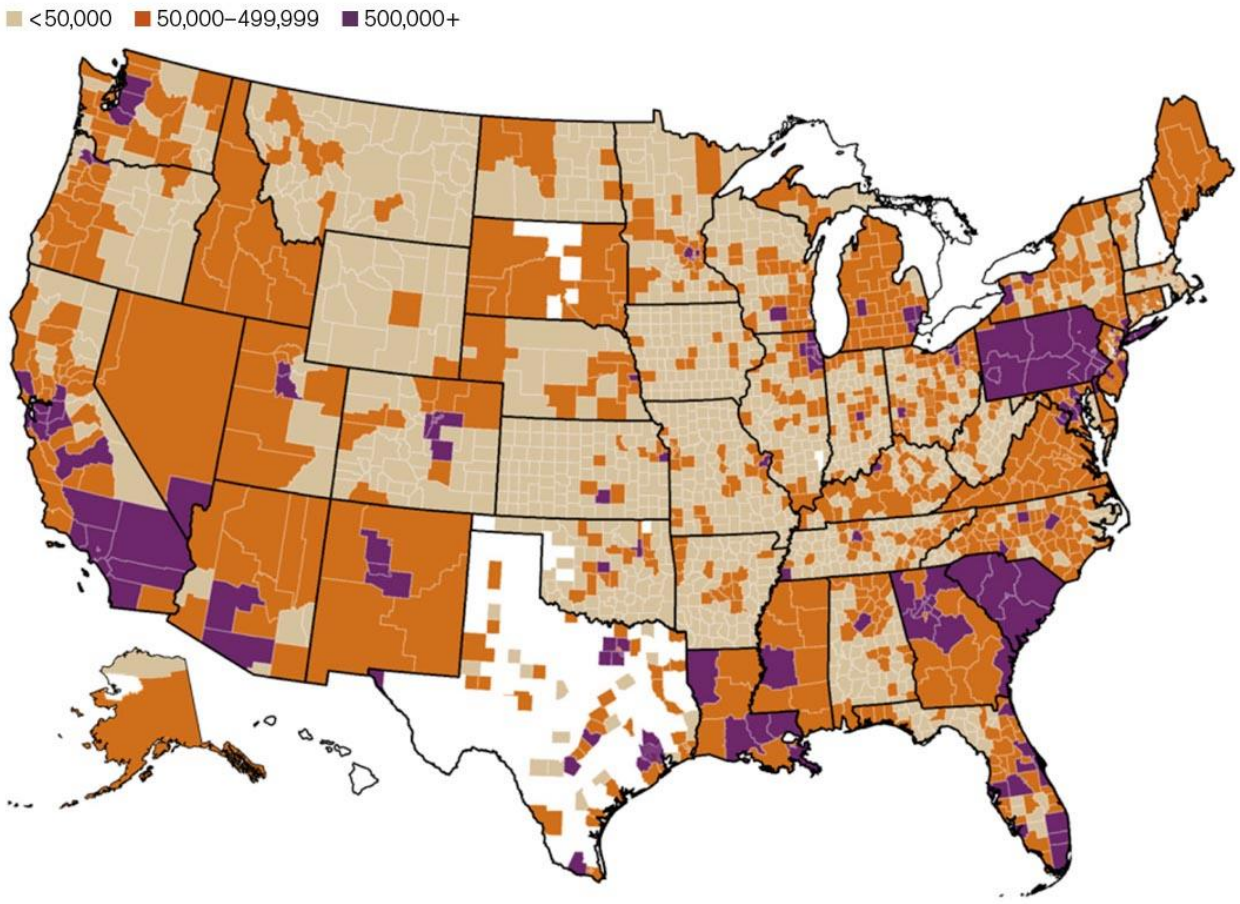
Percent of U.S. population served by LHDs



N=2,533

Source: National Association of County and City Health Officials (NACCHO) 2016 National Profile of Local Health Departments

Size of population served by LHD jurisdiction

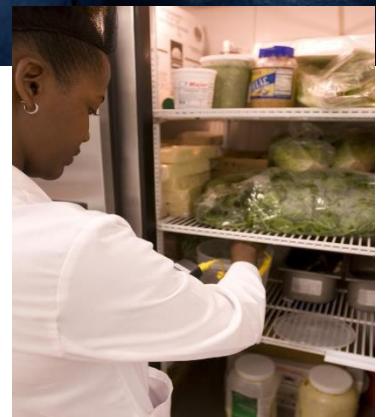


Source: National Association of County and City Health Officials (NACCHO) 2016 National Profile of Local Health Departments

AI and the Potential and Promise for Local Public Health

NACCHO
National Association of County & City Health Officials

- AI models to track spread of Lyme Disease
- AI and the Opioid Epidemic
- AI and risk scoring for chronic diseases
- AI to prevent suicide and patient self-harm
- AI to predict patient utilization of public health clinics
- AI to track use of public engagement and satisfaction
- AI for targeted outreach
- AI for food safety



The Role of Local Health in COVID-19

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National Association of County & City Health Officials

- General education
- Provider education
- Combatting stigma
- Special populations at risk (homeless, elderly, underserved, general at risk)
- Activating All-Hazards Preparedness Plans/Standing up ICS
- Maintaining key public health services and infrastructure in crisis
- Identifying and sourcing quarantine facilities
- Surveillance and contact tracing
- Monitoring Persons Under Investigation (PUIs) and linking PUIs to testing
- Working with CDC/airports to monitor incoming passengers
- Conducting community stakeholder meetings

Artificial Intelligence and COVID-19 Response Opportunities at LHDs

NACCHO
National Association of County & City Health Officials

Use Case or User Group	Category	Examples of Applications	Technology
Patients and families	Health monitoring Benefit/risk assessment	• Devices and wearables • Smartphone and tablet apps, websites	Machine learning, natural language processing (NLP), speech recognition, chatbots
	Disease prevention and management	• Obesity reduction • Diabetes prevention and management • Emotional and mental health support	Conversational AI, NLP, speech recognition, chatbots
	Medication management	• Medication adherence	Robotic home telehealth
	Rehabilitation	• Stroke rehabilitation using apps and robots	Robotics
Public health program managers	Identification of individuals at risk	• Suicide risk identification using social media	Deep learning (convolutional and recurrent neural networks)
	Population health	• Eldercare monitoring	Ambient AI sensors
	Population health	• Air pollution epidemiology • Water microbe detection	Deep learning, geospatial pattern mining, machine learning

Source: Matheny, M., S. Thadaney Israni, M. Ahmed, and D. Whicher, Editors. 2019. *Artificial Intelligence in Health Care: The Hope, the Hype, the Promise, the Peril.* NAM Special Publication. Washington, DC: National Academy of Medicine.

Artificial Intelligence and Tech Advancements to Address COVID-19

NACCHO
National Association of County & City Health Officials

- Telehealth
- Fever Tracking
- Predictive Analytics of those at risk
- Trends in infection and targeted response efforts
- Structural predictions for “understudied proteins” that are linked to COVID-19
- Social Media algorithms
- Robotics and telemedicine for quarantined populations
- Virtual assistants that can be integrated into other platforms, including scheduling and telemedicine applications.

New Advancements Worth Highlighting

NACCHO
National Association of County & City Health Officials

White House Urges AI Experts to Develop Tools for COVID-19 Dataset

The White House is calling for the development of new artificial intelligence techniques that can help researchers answer key questions about COVID-19.

Source: Getty Images

LEARN MORE

NACCHO/APHA Partner to Support "All of Us" Research Program

NIH's "All of Us" aims to collect health data on one million people to advance precision medicine.

MODERNIZING FOR NEW AND COMPLEX THREATS

We need a totally integrated, high speed health data system to keep us safe from diseases and outbreaks.

DATA4PREVENTION

Outbreaks strike frequently and without warning. Novel and unforeseen threats are around every corner. We need the right data at the right time to predict and prevent them.

CDC NEEDS DATA THAT CAN MOVE FASTER THAN DISEASE.

We need every system talking to each other in real time — from local communities, to states, to national and global networks — to stay ahead of whatever comes next.

MODERNIZING OUR NATION'S HEALTH DATA BEGINS WITH:

- Funding to local and state health departments
- Creating advanced tools and capabilities at CDC
- Building a public health workforce skilled in data science and informatics
- Realizing best-in-class innovation with research, private-sector, and public health partners.

DERNIZATION IS NOT ONE-TIME INVESTMENT

Data modernization is not optional. It must go all the way. If we continue to piecemeal our efforts as we have done in the past, disease will win, and lives will be needlessly lost.

CDC'S PUBLIC HEALTH DATA MODERNIZATION INITIATIVE

We are implementing a cross-cutting strategy for modernization that will move us from tracking threats to predicting them. We are accelerating lifesaving disease prevention and response to protect Americans from health threats.

"Getting real-time data for emergencies is why data modernization is so critical. Imagine if all 6,100 U.S. hospitals could send automatic, immediate coronavirus disease reports from the electronic health record to public health."

Chesley Richards, MD, MPH, FACP, CD
Director for Public Health Sci

CDC | CDC24/7

Learn

Thank you!

NACCHO
National Association of County & City Health Officials

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Chief Executive Officer
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Washington, DC 20005
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lfreeman@naccho.org

AI In Action

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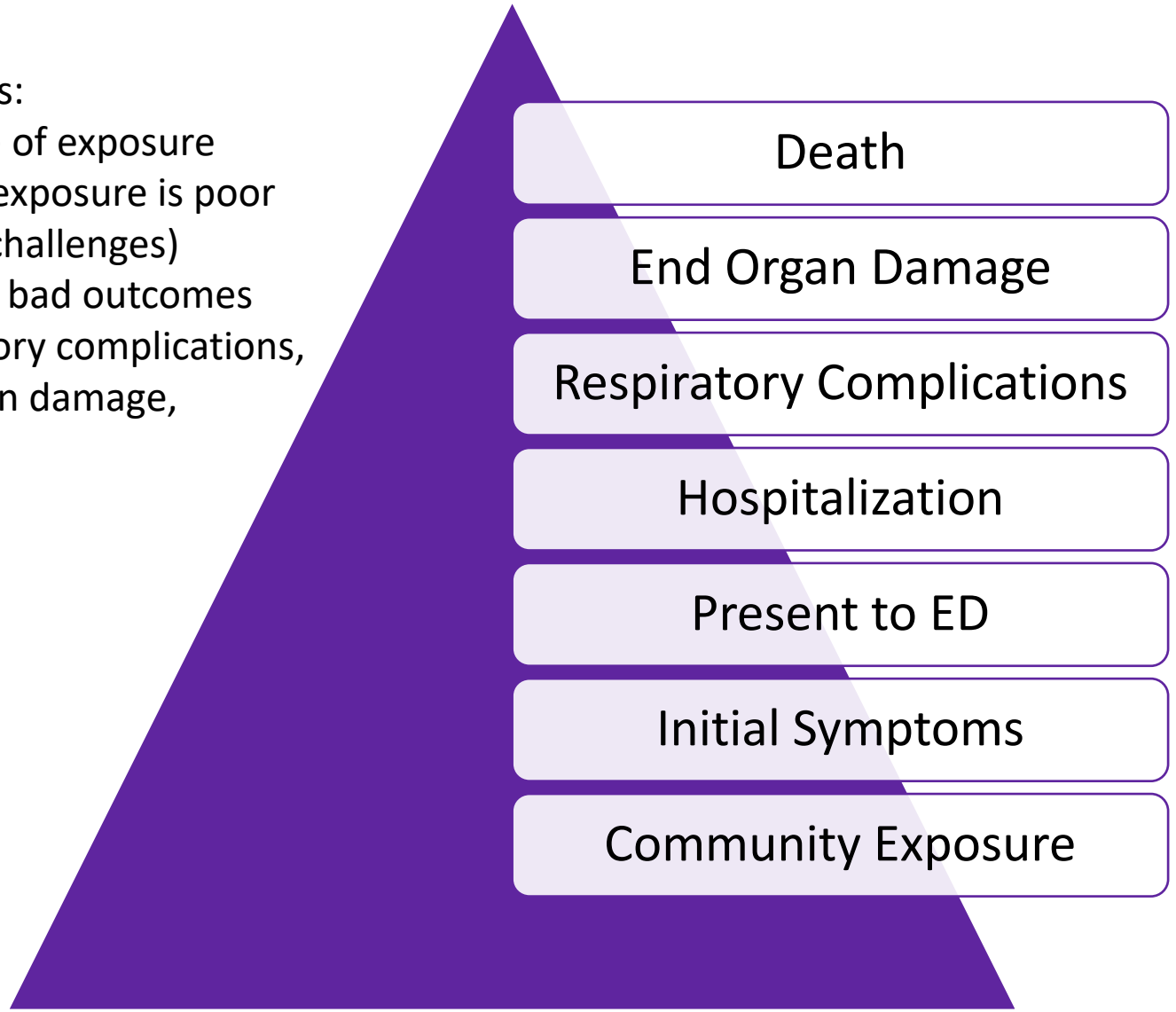
Predictions Levels

Assumptions:

- High rate of exposure
- Data on exposure is poor (testing challenges)
- Focus on bad outcomes (respiratory complications, end organ damage, death).



Predictions need to happen at two levels:

1. Community level (based on publicly available data) to create a national visualization/map
2. Individuals (at the point of presentation to the ED or hospital)

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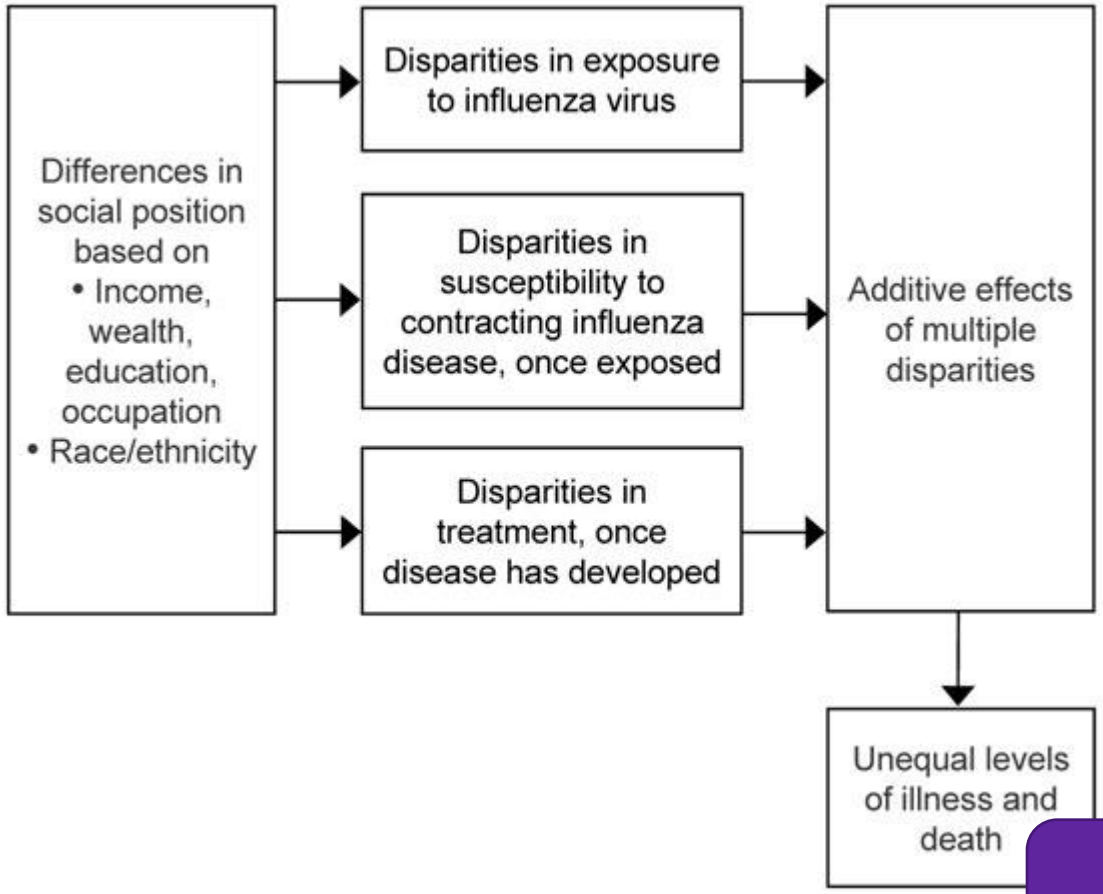
Disparities in a Pandemic



3x in H1N1

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Connecting Solution Development to Impact

Community Level Insights

- Connecting local leaders with vulnerable populations
- Public health solution

COVID Community Vulnerability Map - National

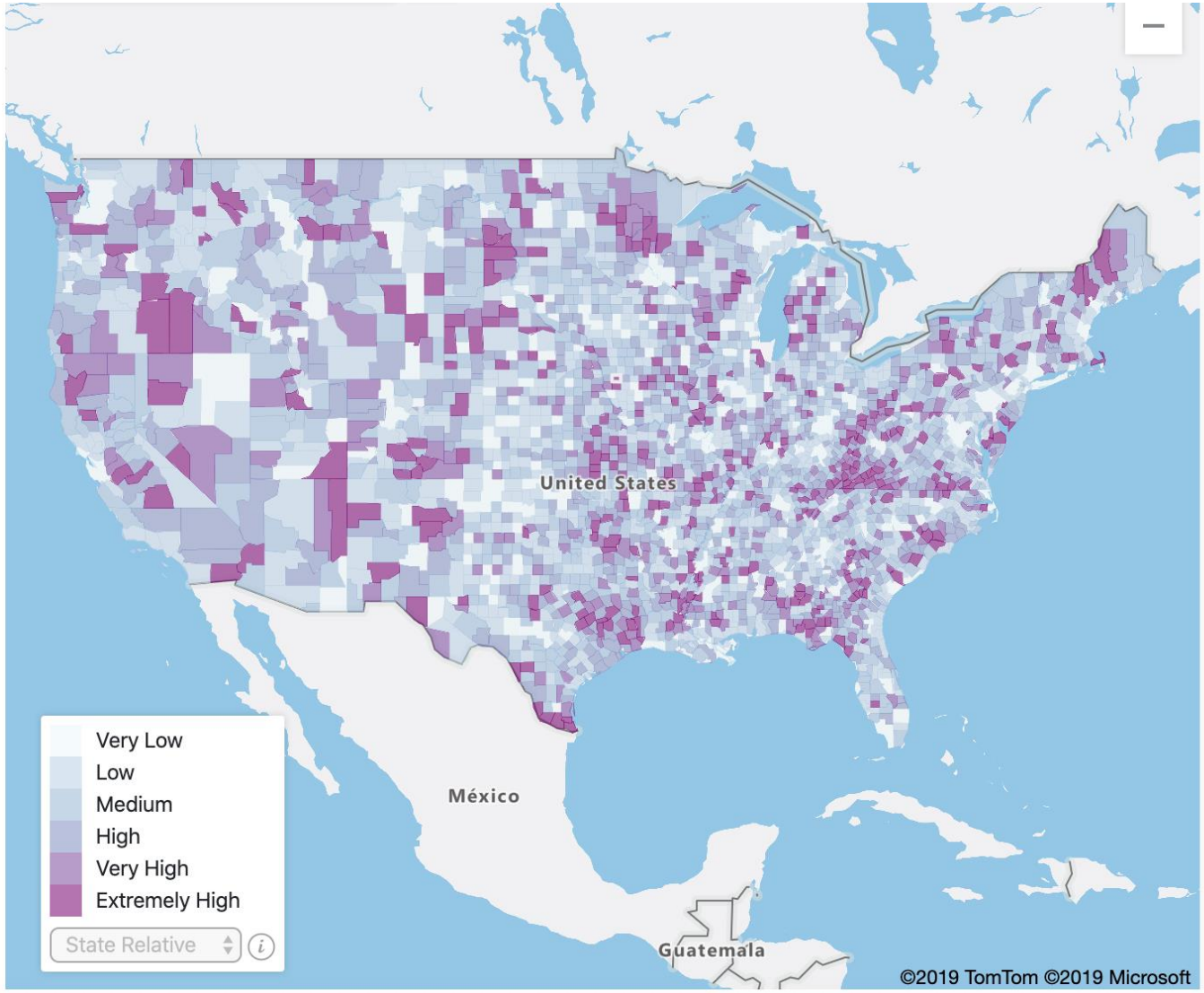
drill down into communities to view populations most vulnerable for severe outcomes if infected with a COVID-like virus and the socioeconomic factors driving that risk.

How to use this map:

Select a geographic location or enter a reference point in the search bar to drill down to census block level information.

Map powered by

Microsoft



or enter a reference point in the search bar to get started.

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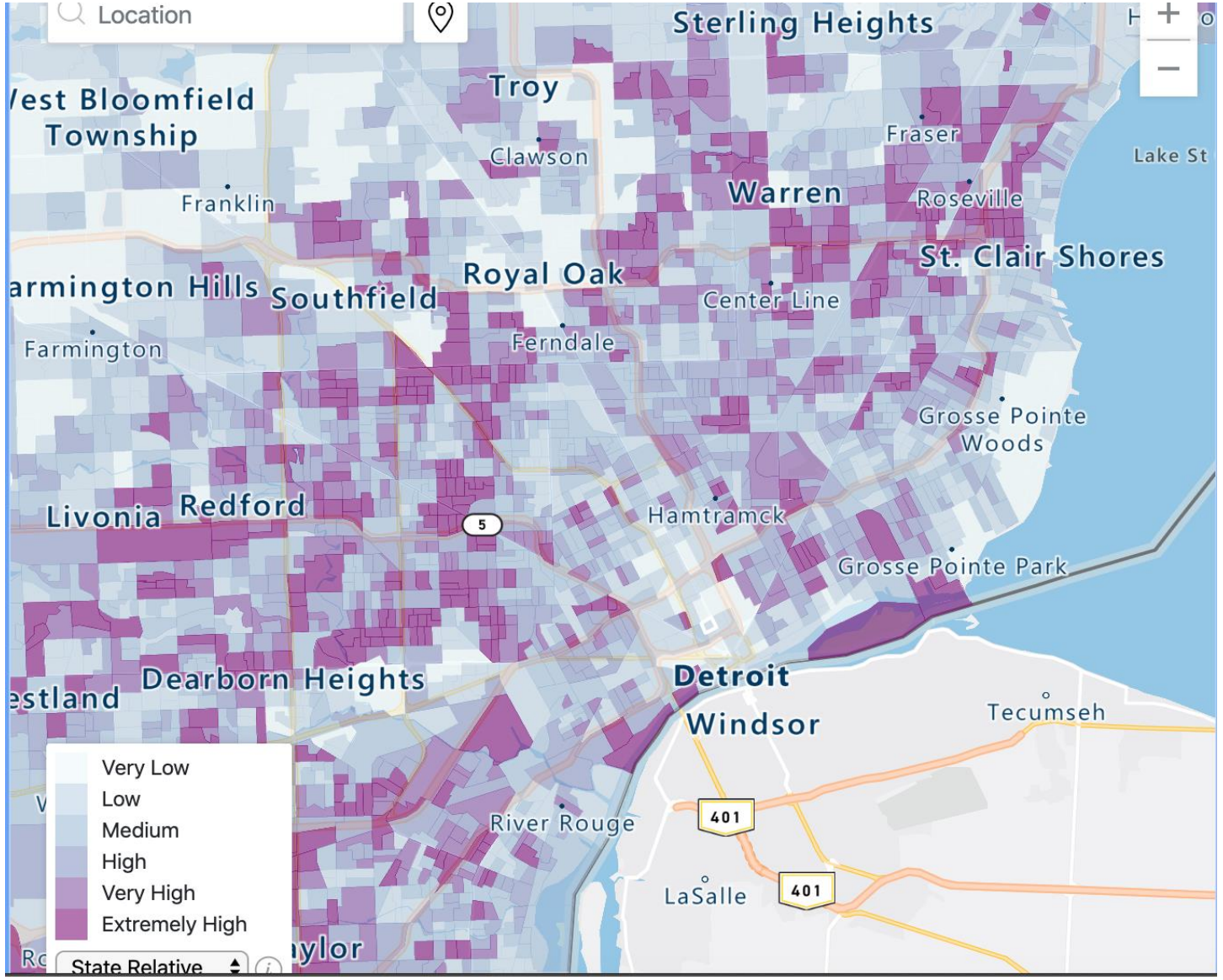
COVID Community Vulnerability Map - City



Once zoomed into the county view, the local areas of risk highlight

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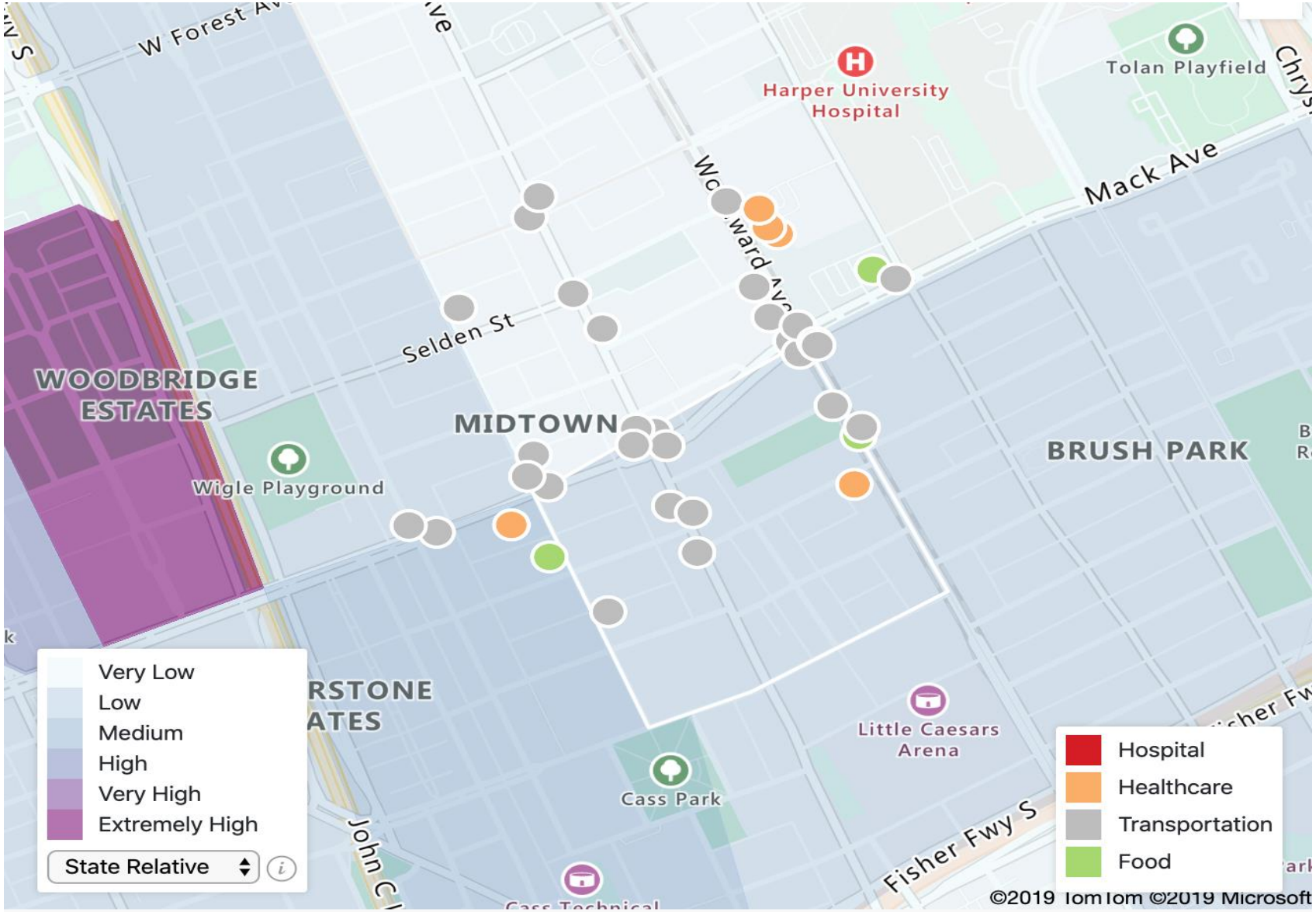
COVID Community Vulnerability Map – Block Level



At the block level, points of interest come into view

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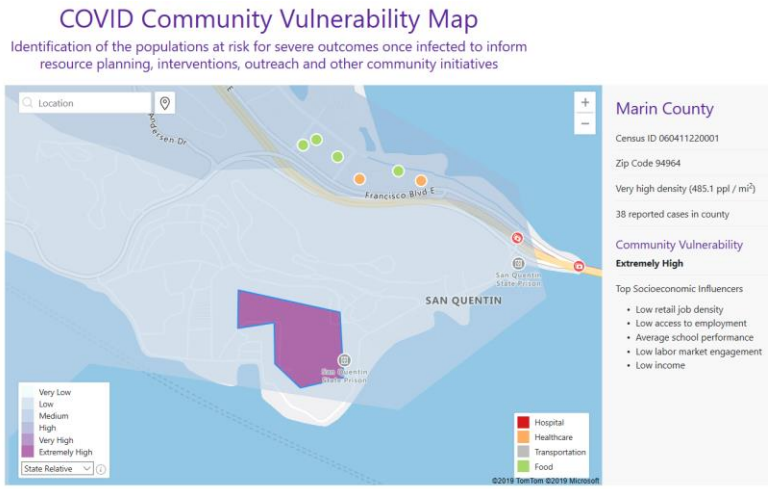
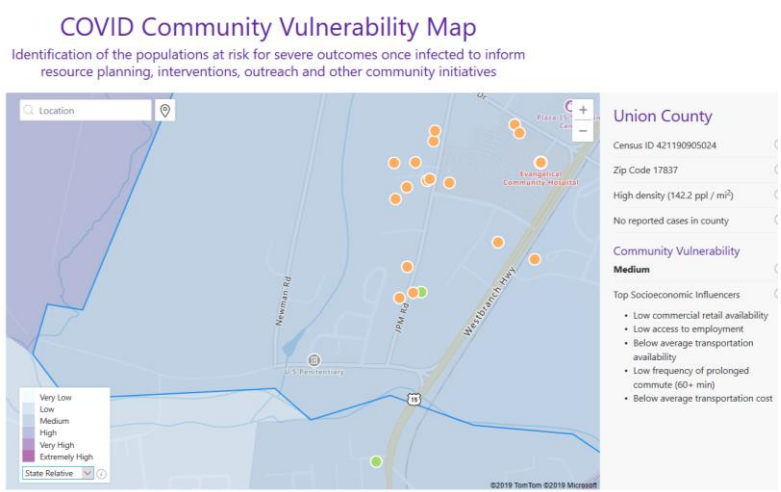
Capturing ALL Vulnerable Populations - Prisons



San Quentin State Prison

Rikers Island Correctional Facility



Lewisburg US Penitentiary

The COVID Community Vulnerability analysis identifies elevated risk in prisons, but also discerns the risk between prisons

- San Quentin houses 4,000 inmates on 432 acres
- Rikers Island houses 10,000 inmates on 400 acres
- Lewisburg US Penitentiary has less than 1,400 on 1000 acres; almost 600 are in a prison camp

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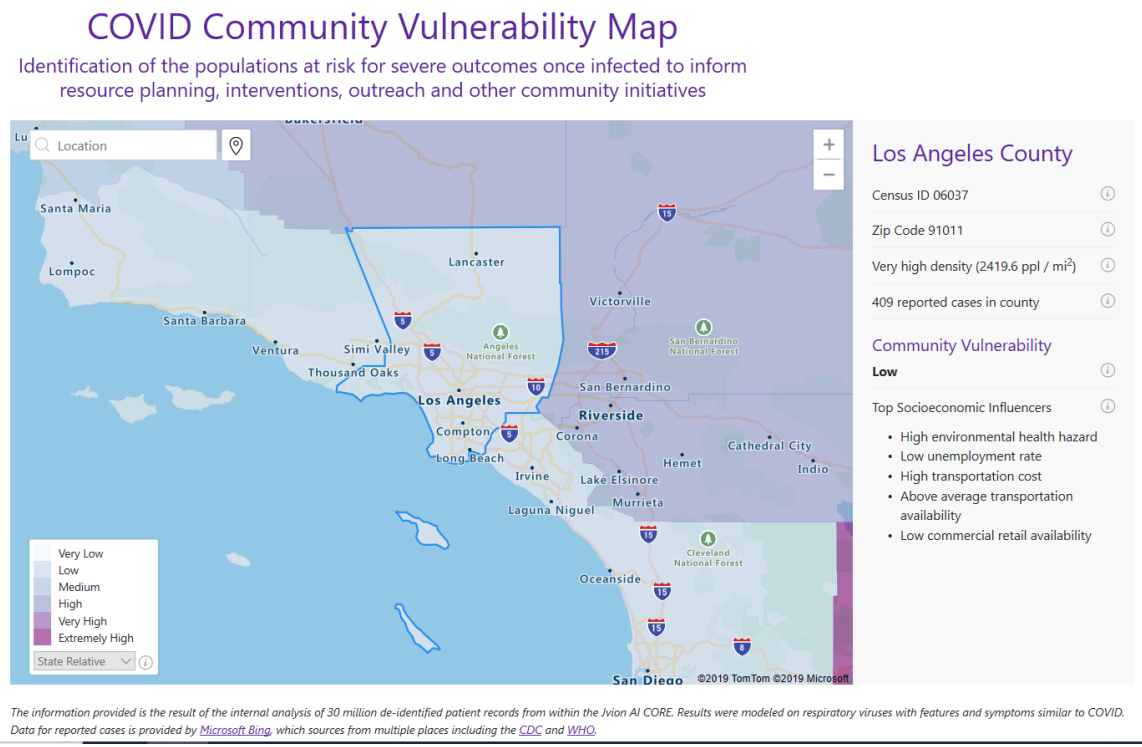
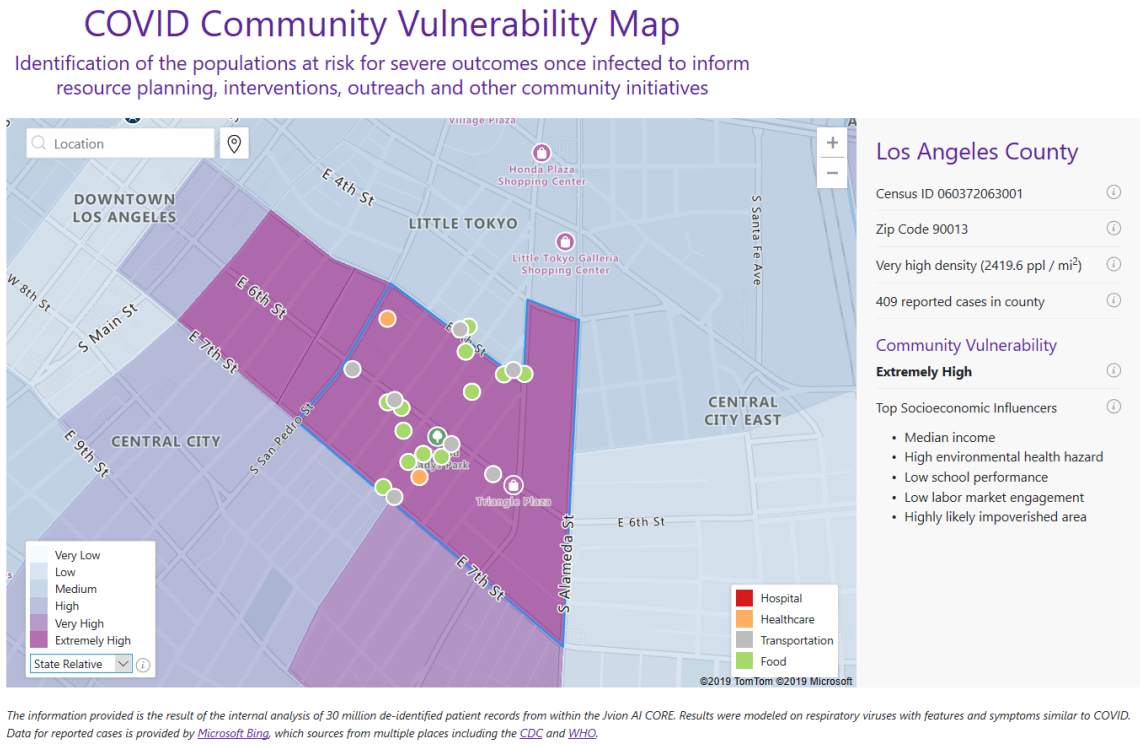
People Experiencing Homelessness

Los Angeles County is Low Vulnerability



The information provided is the result of the internal analysis of 30 million de-identified patient records from within the Jvion AI CORE. Results were modeled on respiratory viruses with features and symptoms similar to COVID. Data for reported cases is provided by Microsoft Bing, which sources from multiple places including the CDC and WHO.

Concentration of Homeless in LA has Extremely High Vulnerability



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As of the 2019 census, the population of the district was 4,757. Central City East contains one of the largest stable populations (about 2,783) of homeless people in the United States[4][5] The area covers fifty city blocks immediately east of downtown Los Angeles, Skid Row is bordered by Third Street to the north, Seventh Street to the south, Alameda Street to the east, and Main Street to the west.

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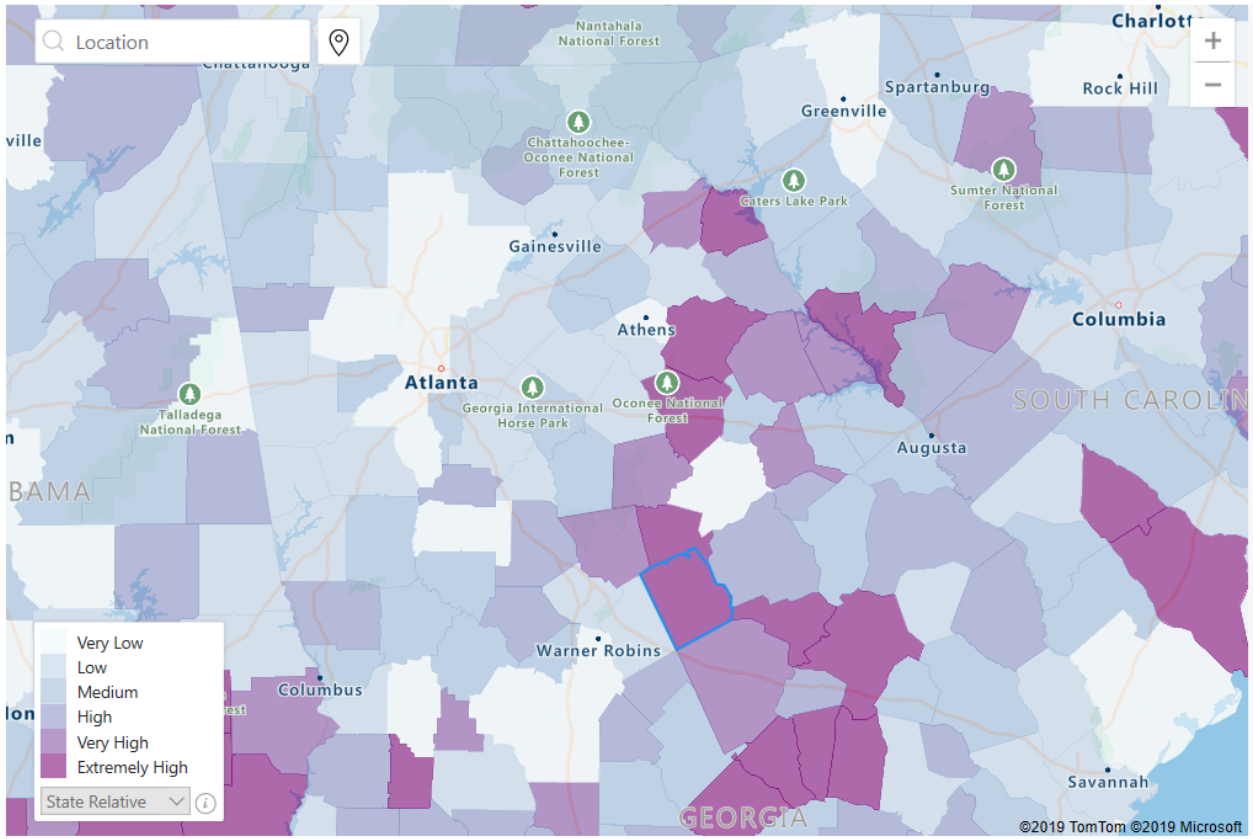
Varying Levels of Risk in Rural Areas

COVID Community Vulnerability Map

Identification of the populations at risk for severe outcomes once infected to inform resource planning, interventions, outreach and other community initiatives



Wilkinson County

Census ID 13319

Zip Code 31042

Low density (21.4 ppl / mi^2)

No reported cases in county

Community Vulnerability

Extremely High

Top Socioeconomic Influencers

- Highly likely impoverished area
- Low transportation cost
- Low commercial retail availability
- Low unemployment rate
- Below average labor market engagement

The information provided is the result of the internal analysis of 30 million de-identified patient records from within the Jvion AI CORE. Results were modeled on respiratory viruses with features and symptoms similar to COVID. Data for reported cases is provided by Microsoft Bing, which sources from multiple places including the CDC and WHO.

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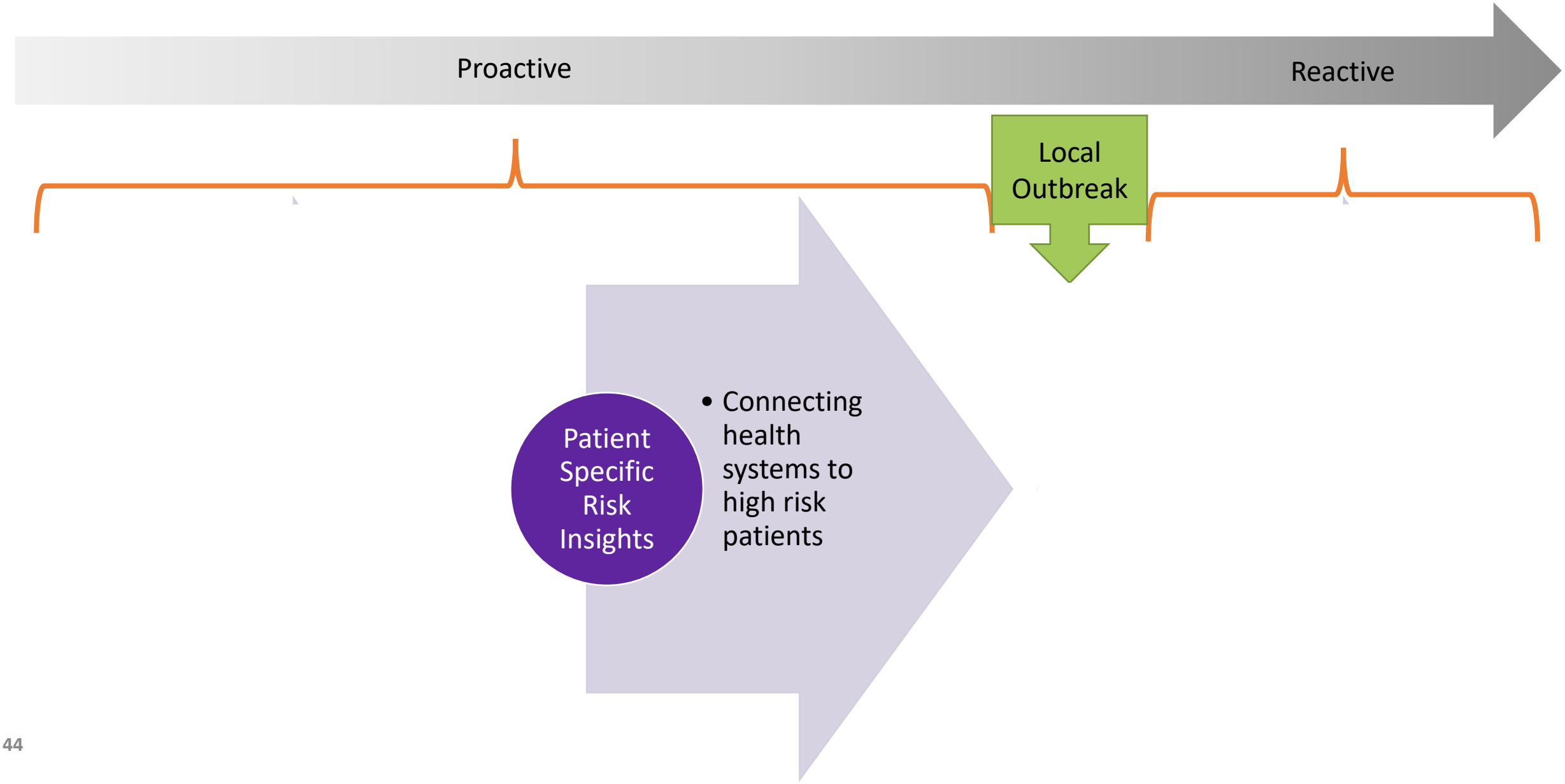
Connecting Solution Development to Impact



Actionable Patient Lists

A	B	C	D	E	F	G	H	I	J	K	L
patient_id	date_of_birth	gender	patientlastna	patientfirstnan	risk_rank	total_patien	addresslin	addressline2	city	state	zip

- A list of your patients who are most at risk for a severe course with COVID, if they contract the disease
- The risk list incorporates both clinical and socioeconomic data*
- Those patients should change behaviors to self-isolation practices
- Opportunity to engage with automated patient engagement solutions

Drives targeted interventions

Minimize in -person contact
No in person social activities
No shopping
No visitors (even family)
Have food delivered
Medical care face to face deferred if possible
Telemedicine
Prescriptions dropped off
Where/when to be tested
Home visit

** These high-risk patients particularly need to have their medical conditions managed. If they are overlooked or neglected during this crisis, they will be the next wave of hospitalized patients.*

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Connecting Solution Development to Impact

- Understanding who is lowest risk and highest risk for mortality will inform real-time decision-making
  - Low risk mortality – could consider discharge home
  - High risk mortality – recognize likely need for ventilatory support
- The actions taken next could be driven by a decision tree

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