Prep Response

Open Community Forum: COVID-19 Technology & GIS Hot Wash Part 1

June 23, 2020

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Agenda

01 Introduction & Welcome

02 Why Location Data and Technology for Epidemiology and Pandemic Response

03 Overview of the National Pandemic GIS Task Force

04 COVID-19 Stories & Conversation with Local and State Partners

05 Community Discussion: Key Issues and Capability Gaps

06 Take Action and Contribute

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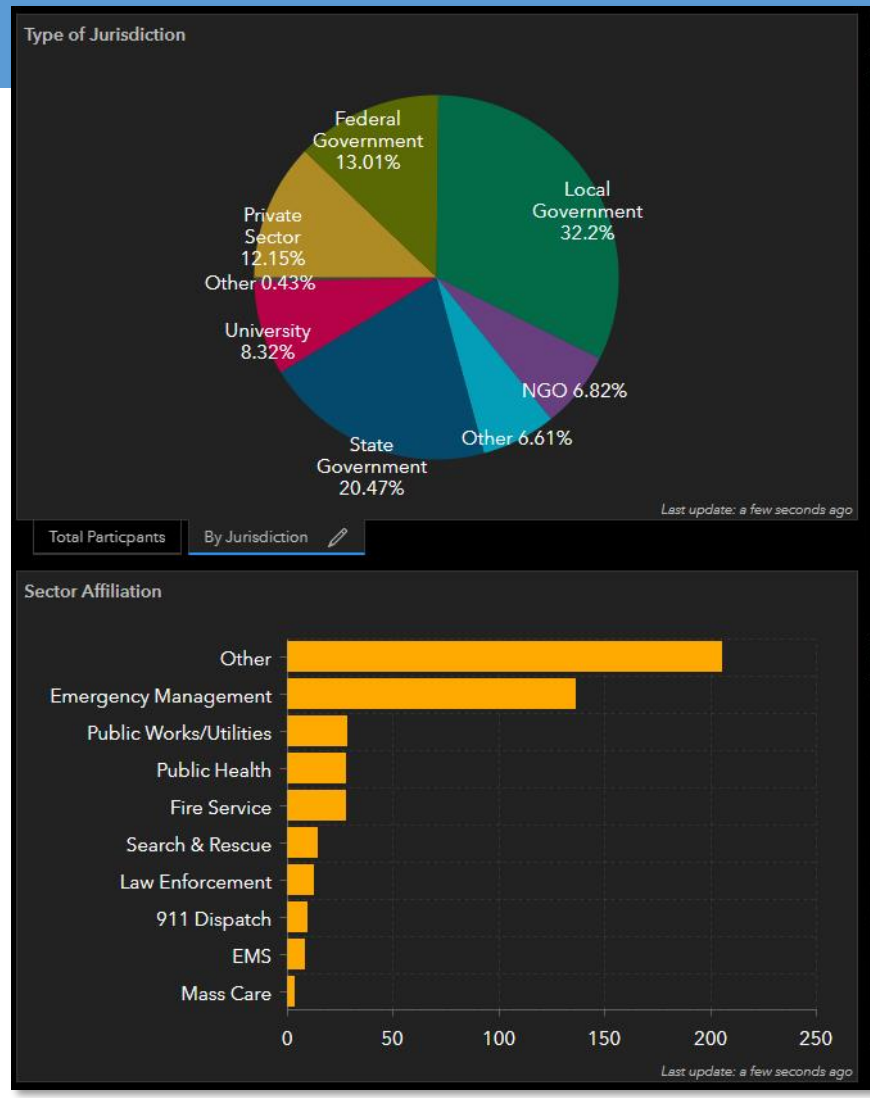
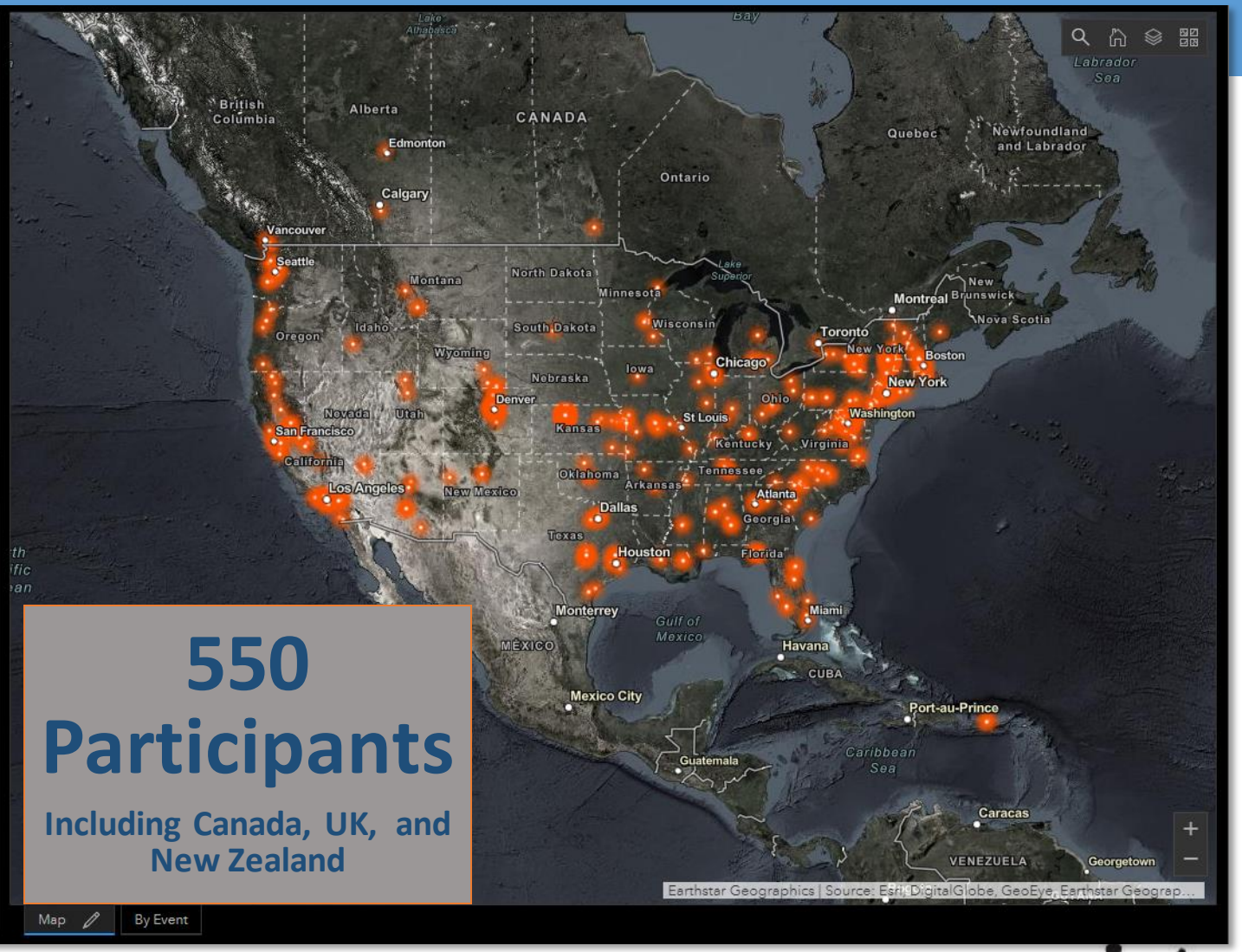
Who is Here





550 Participants

Including Canada, UK, and New Zealand

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House Keeping

- Full Zoom and Audio via weblink and/or in combination with Telephone for audio
- Audio Only – Call-in using the Telephone Numbers Provided for Listen only.
- All participants will receive the recording and materials following the session.
- Active Engagement using Q&A in ZOOM and MentiMeter

This slidedeck, supporting materials, and a recording of today's session will be posted to the NAPSG website and an email will be sent to all registered participants with the link.

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Engage and Participate!

- Due to the large attendance, all participants are muted for the duration of the session to prevent background noise.
- Please **use the Q&A functionality within Zoom and MentiMeter**.
- We will address these Q&A periodically during the webinar!

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01

Welcome

Justin Kates - NAPSG

Director of Emergency Management, City of Nashua, NH

NAPSG Foundation

Frank Winters – NSGIC

GIO, State of New York

NSGIC
National States Geographic Information Council

Carl Anderson – URISA

Senior Solutions Architect, New Light Technologies

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02

Why Location Data and Technology for Epidemiology and Pandemic Response?

K.C. Rondello, M.D., M.P.H., CEM
Disaster Epidemiologist and Clinical Associate Professor of Public Health and Emergency Management, Adelphi University

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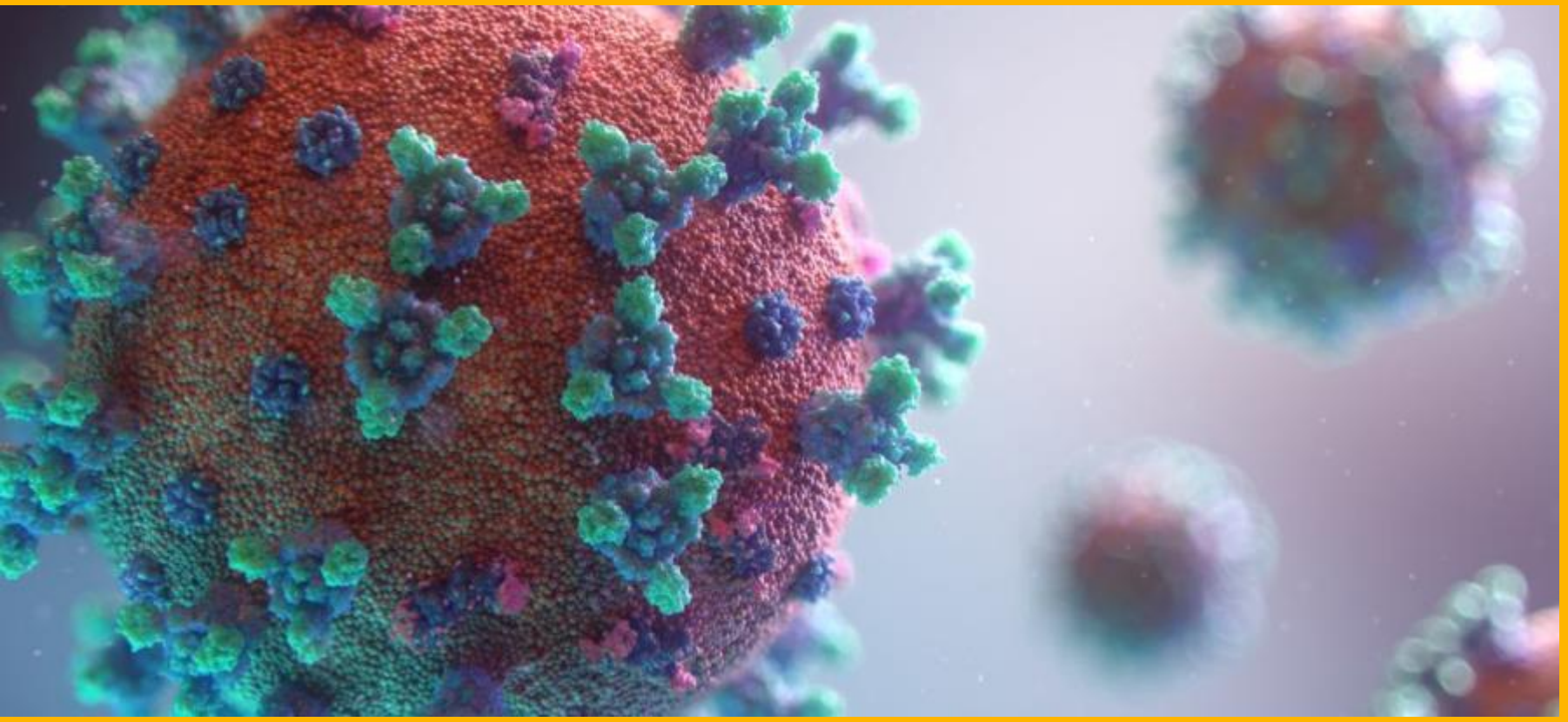

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NEW YORK

Why Location Data and Technology for Epidemiology and Pandemic Response?

K.C. Rondello, M.D., M.P.H., CEM

June 23, 2020

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UNIVERSITY

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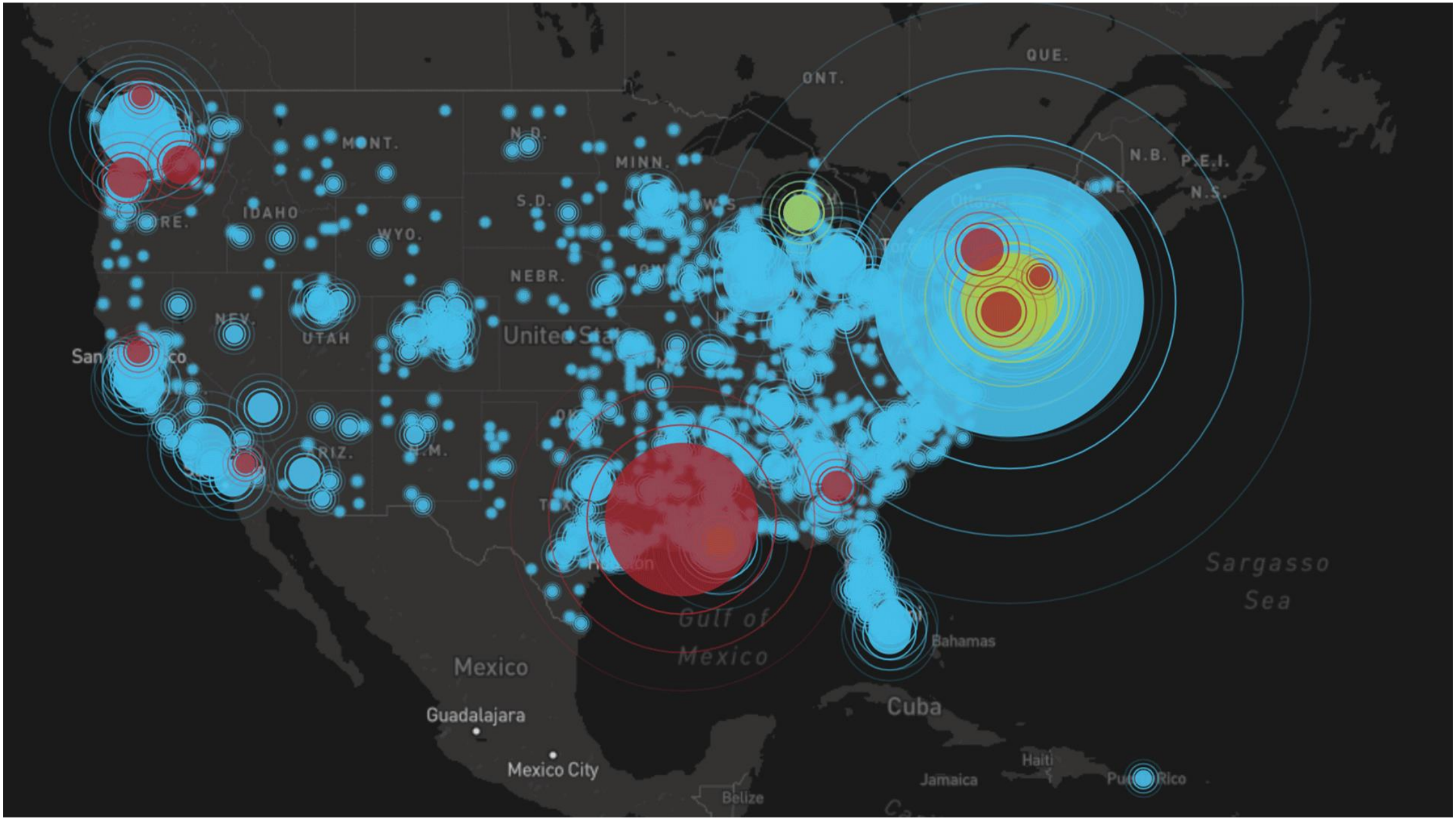
JOHN SNOW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Sea
Gulf of
Mexico
Bahamas
Mexico
Cuba
Guadalajara
Mexico City
Haiti
Jamaica
Belize

03

Overview of the National Pandemic GIS Task Force

Justin Kates - NAPSG

Director of Emergency Management,
City of Nashua, NH

Frank Winters – NSGIC

GIO, State of New York

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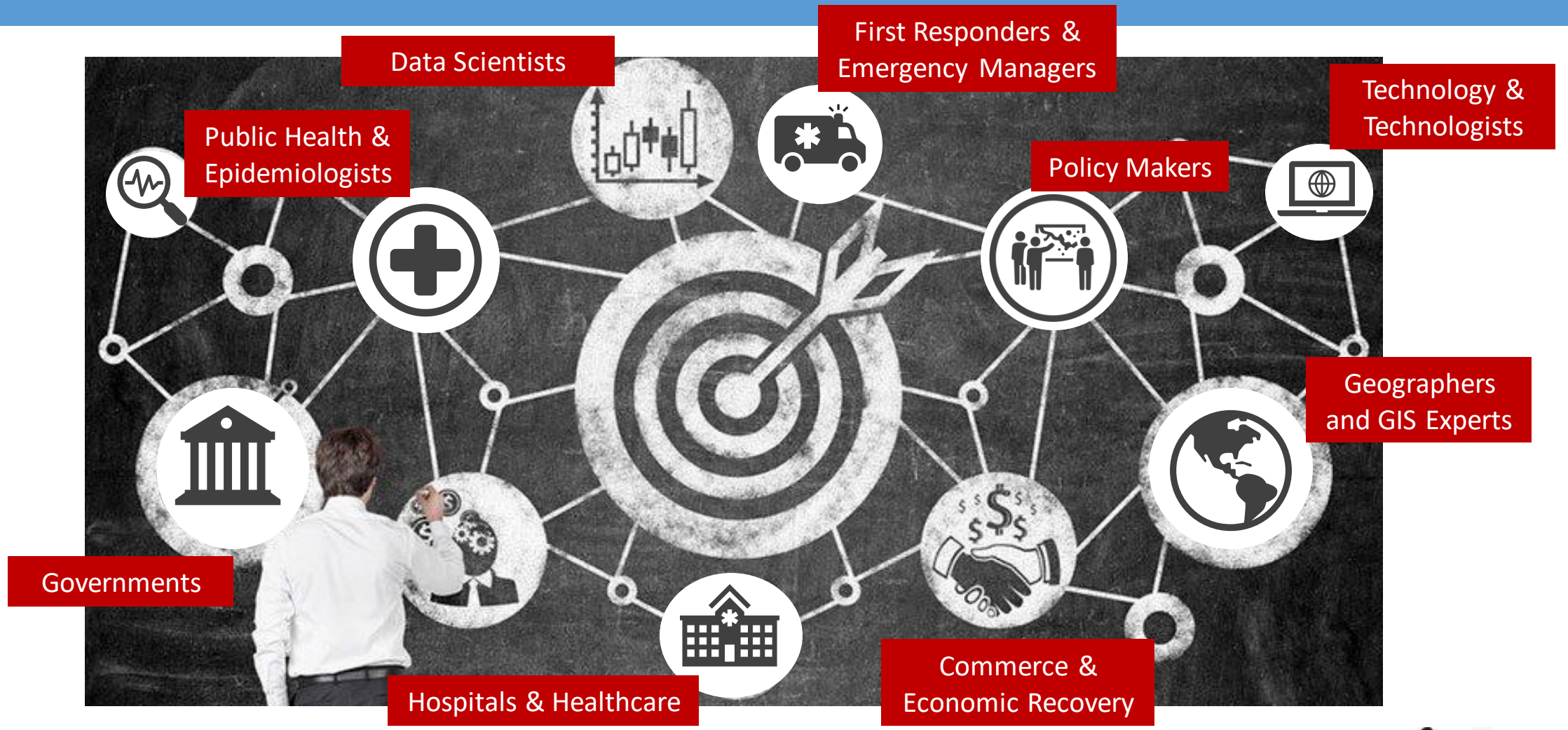
Unifying Efforts

Establish a foundation for a data-driven public health and emergency management system



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National Pandemic GIS Task Force

Increasing pandemic preparedness and unity of effort by enabling effective information sharing and use of location-enabled technology for informing critical decision making.

- **Providing** thought leadership, expertise, and governance across the public safety and technology/GIS community.
- **Engaging** the public safety community in capturing challenges, successes, and lessons learned
- **Facilitating** the development of a COVID-19 Technology and GIS After-Action Review and Improvement Plan.
- **Coordinating** across disciplines - in advancing consistent use of technology, GIS, and information sharing for pandemic preparedness, response, and recovery.
- **Developing** a standardized National Playbook for Integrating GIS in Pandemic Response & Recovery.
- **Contributing** to and promulgating out a community portal for the curation and sharing of technology and GIS best practices and toolkits.

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COVID-19 Technology & GIS AAR Process

Identify and document capability gaps and lessons learned in information sharing and the use of GIS & technology to support coordination and decision making by public health and emergency management in response and recovery from COVID-19.

June 2020
Conduct first virtual engagement session for public safety stakeholders

June 2020
Develop and release a COVID-19 Technology & GIS Hot Wash Questionnaire

August 2020
Conduct second virtual engagement session for public safety stakeholders

September 2020
Release version 1.0 COVID-19 Technology & GIS AAR and Improvement Plan

Ongoing
Coordinate with the FEMA / HHS COVID-19 after-action team on integration of findings

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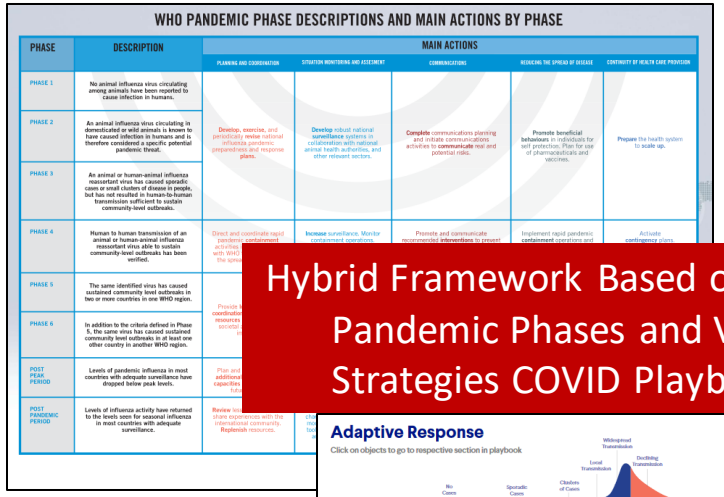
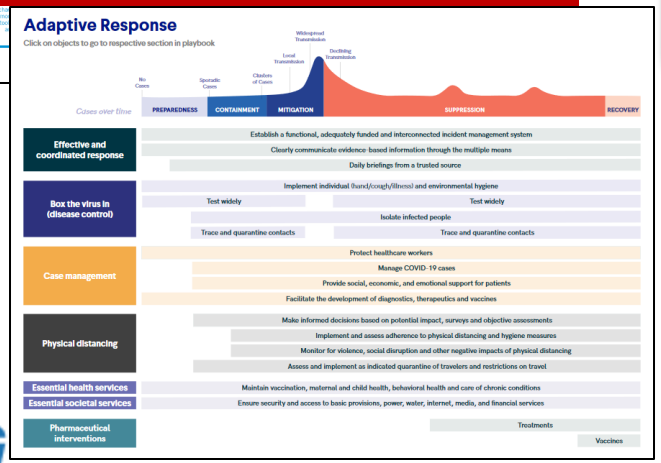
National Playbook

Develop and promote use of a standardized National Playbook for Integrating Technology & GIS in Pandemic Response & Recovery.



Hybrid Framework Based on WHO Pandemic Phases and Vital Strategies COVID Playbook



May 2020	June-Aug 2020	September 2020	Fall 2020
Literature Review & Analysis	**Task Force Develops Complete Draft**	**30-Day Open Public Comment Period**	**Final v 1.0 Released Publicly**

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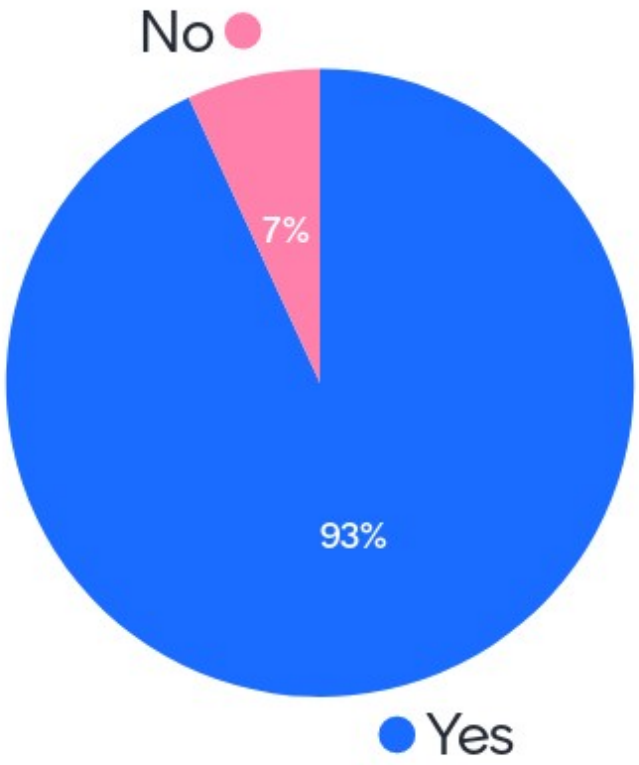
Is the Task Force on the right track?

Mentimeter



102

What is missing from our strategy & plan of action?

Mentimeter

- Racial equity
- Privacy Protection
- How to access
- timelines are too long
- Emphasize the need for open data.
- Overcoming silos
- Health Department participation
- Unclear on if it covers scalability
- A succinct, compelling vision statement

89

What is missing from our strategy & plan of action?

Mentimeter

Common database

Local GIS professionals should be able to submit what they have done for COVID-19.

Accessibility

Data governance for the long term

How to participate further

Standardized/recommended metrics for everyone to track

Racial equity

normalizing statistics across areas

Authoritative Data

89

What is missing from our strategy & plan of action?

Mentimeter

Data Sharing

Mechanisms to create partnerships

How do we know that this is the right time since we are still in the middle?

Collaboration issues

Data hoarding

representation

Tangible next steps

Not just technology, but organizational processes for working between agencies

collaborations with stakeholders

89

What is missing from our strategy & plan of action?

Mentimeter

- Data access and availability
- Open data
- Timeline is too long
- a more specific interdisciplinary evaluation
- Coordination with local units
- aggregation of data for easy access and analysis
- how can we streamline data collection?
- COP
- COTS solutions

89

What is missing from our strategy & plan of action?

Mentimeter

integration with other technologies

Build in a timeline - do not leave it open

open authoritative data

Methods for interaction between EOC's and other aspects of government and GIS operations

People that know Health

interoperable workflows.

Granular data

Scalable and automated workflow

Data Sharing

89

What is missing from our strategy & plan of action?

Mentimeter

Focus on consensus standards to facilate data aggregation and QA/QC

regional collaboration

Commin dataset for reporting pandemic numbers.

Working with partners to utilize data sharing

Not enough health experts

Student training

Collaboration with Health Departments.

Data Sharing (Public Data)

Data interoperability

89

What is missing from our strategy & plan of action?

Mentimeter

- standard reporting procedures
- Data consistency across the country
- Untrained Health Dept. staff
- How to encourage adoption of the technology where it isn't being used
- Input from elected officials and senior leadership
- Easier sharing, more centralized
- Emergency management's role in pandemic
- Scalable automation
- milestone benchmarks

89

What is missing from our strategy & plan of action?

Mentimeter

Better public health his outreach and resources

Authoritative data sources

better defined scope and goals

open availability of data

Specific connections between agencies and universities teaching professional GIS degrees

How data GIS fit into the ecosystem of business intelligence solutions?

heath department mistrust of GIS

Funding for GIS

Data warehouses

89

What is missing from our strategy & plan of action?

Mentimeter

success metrics

3rd party oversight and review

Software and licenses use

privacy guidelines for sharing PII data in low population density areas

Would be great to have a single entity and platform for coordinating pandemic data collaboration to avoid duplication of effort.

Data-driven maps

Responding to incidents within an incident

Use of the USNG standard to facilitate analytics and emergency response.

How can more capable departments and jurisdictions support those that need help or lack the resources?

89

What is missing from our strategy & plan of action?

Mentimeter

make sure data used is not "mixing apple and oranges"

Other effects on Societal issues due to Covid-19?

Cooperation with Public Health

Suggestion of built-in timeline referring to Play Book reviews and updates of both documents and partnerships

racial equity/diversity/representation

Time base granular data

Much of what has been worked on is for response. How are you working to support the pivot (using your data) toward economic recovery, especially for states?

State coor

89

04

COVID-19 Stories & Conversations with State and Local Partners

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Questions to Consider

- Did your community face similar challenges?

- Would technology/GIS have been useful in addressing this challenge?
  - If so, in what ways?

CEDWS – COVID 19 Early Detection and Warning System

Using Data for Early Detection of Emergent Threats in the Community

Mike Chard

- Boulder Office of Emergency Management

Mark Mullane

- Boulder County Information Technology & GIS

WHAT – COVID Early Detection and Warning System

- Purpose to look at additional indicators and evidence based data to identify:
  - Trends in community
  - Tell a story about what COVID is doing

Phase I	Phase II
• 911 Data – Live • LTCF and Shelters – Live • Hospital data (EM resource) – Live	• Hospitals (CORIO/CCMCN) – In Development • Systems Tracker (CDPHE Survey) – In Development • Mobility Mapping - In Development

WHO - CEDWS TASK FORCE

- Team formed on 4/19
- GIS specialist, data analysts, data scientist, emergency management
- Develop tools, dashboards and data pipelines

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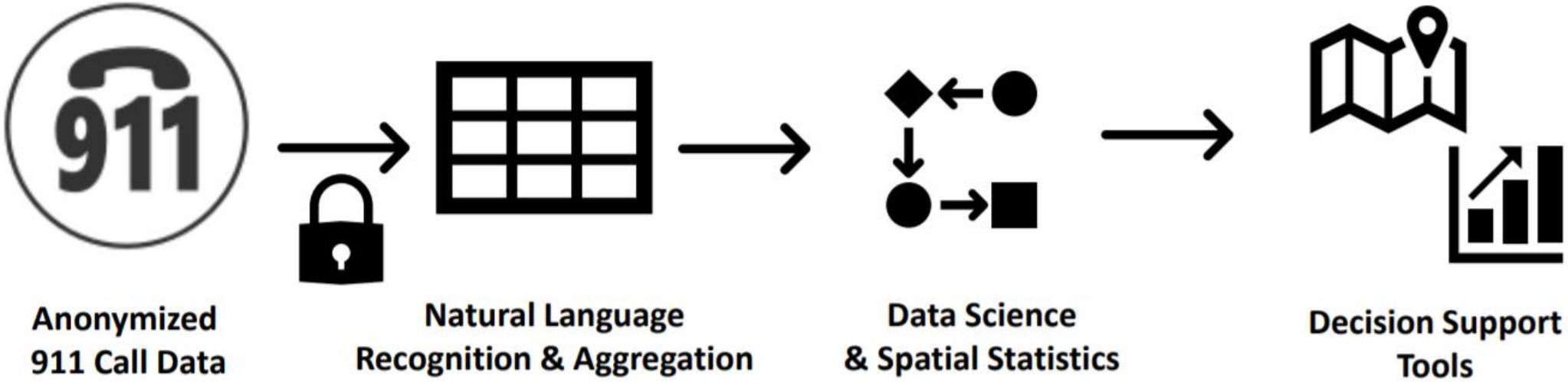
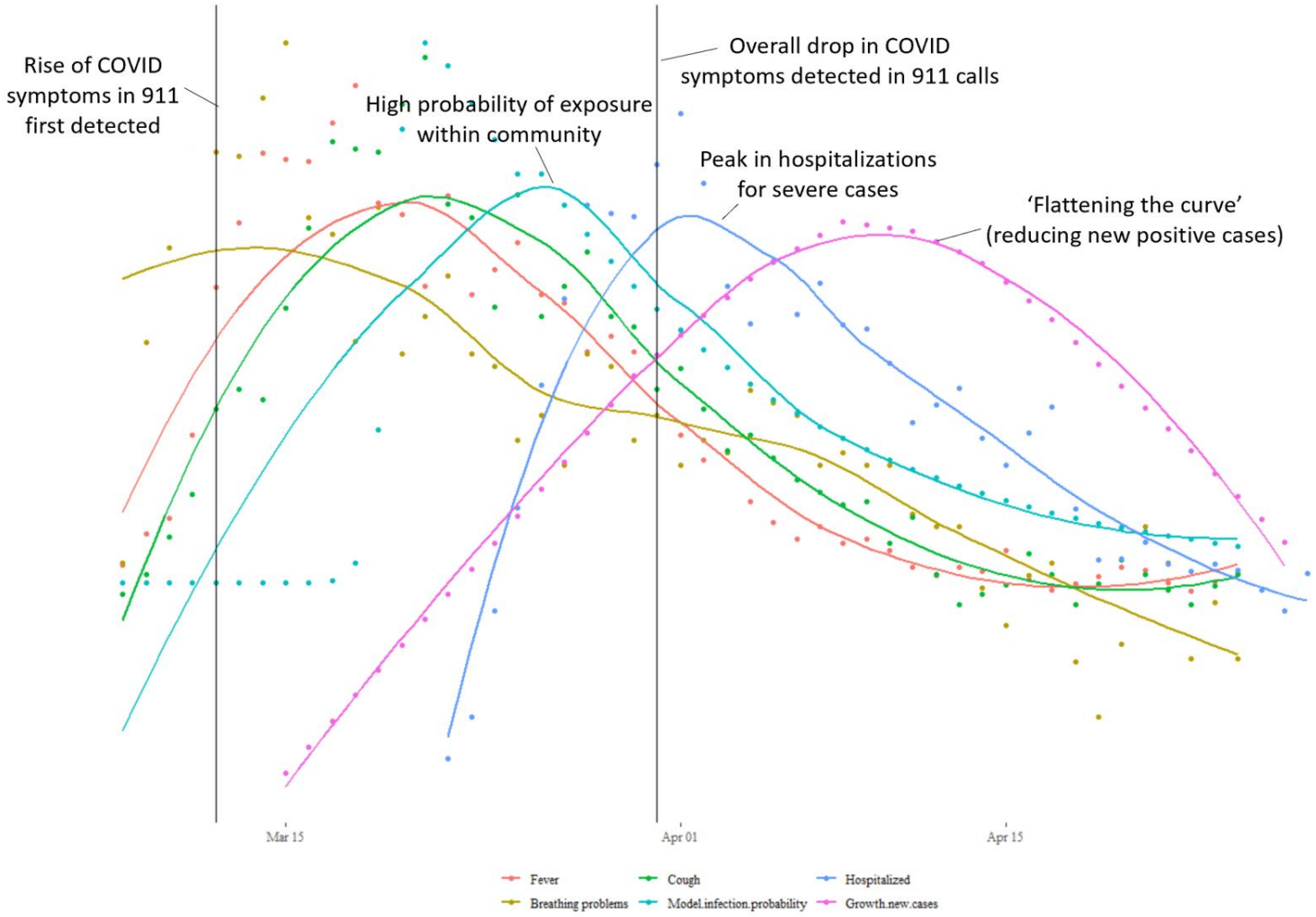
Early Detection & Warning System Overview

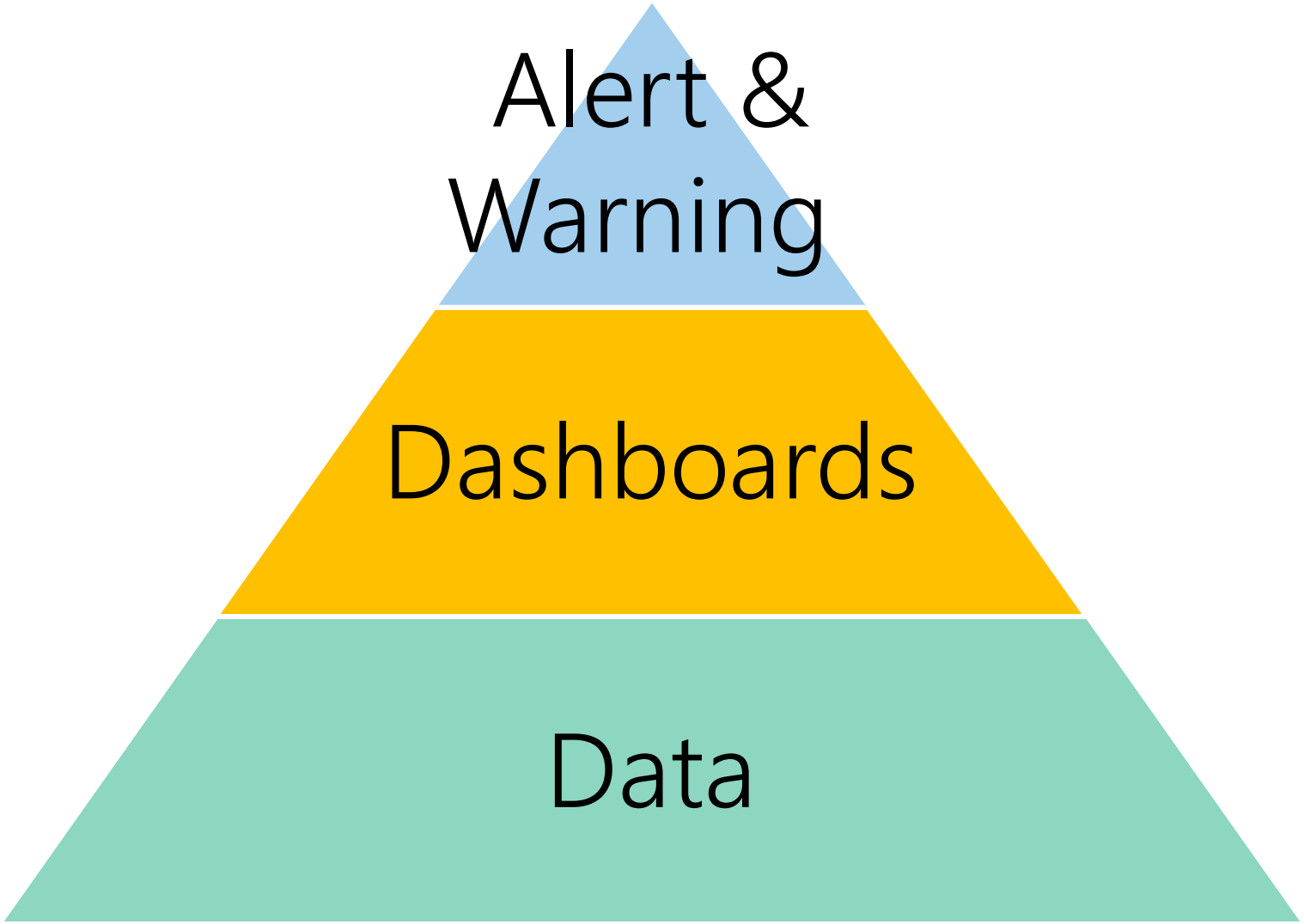


Jump to the punchline before diving into the HOW

Schematic of our overall findings:



CEDWS Components



Data - Example of behaviors we can try to track (79)

Community Health

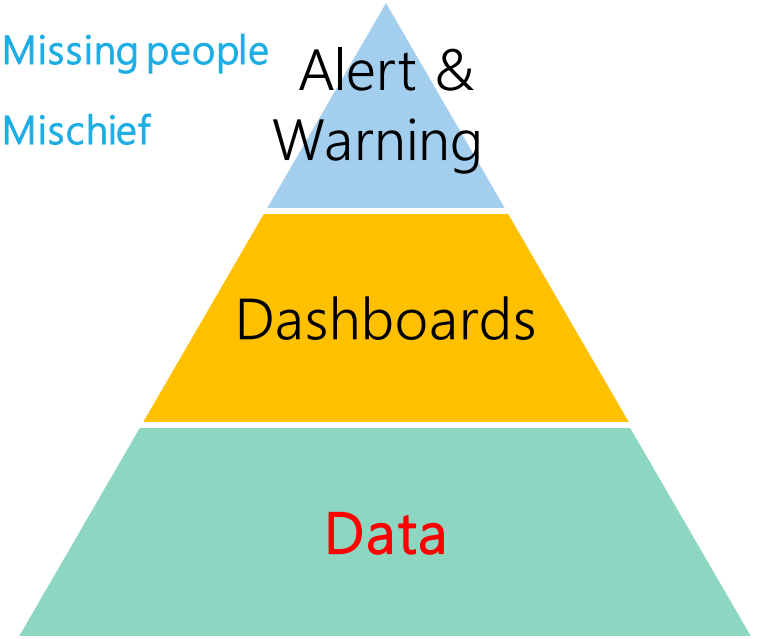
- Cough
- Fever
- Breathing problems
- Heart problems
- Strokes, seizures
- Sickness
- Pain
- Death
- Mental health
- Suicidal
- Alcohol

Community Safety

- Code enforcements
- Order violations
- Odors and smoke
- Fires
- Assaults and disputes
- Disturbances
- Theft, burglary, etc.
- Weapons
- Littering
- Loitering
- Homeless
- Encampments
- Nuisance

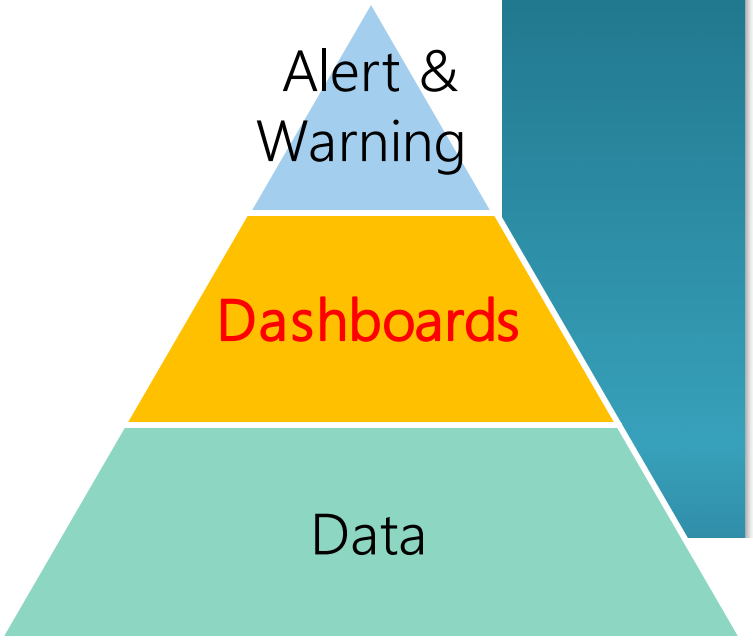
Community Stability

- Assistance
- Rescue
- Noise
- Animal problems
- Follow-ups/hang-ups
- Missing people
- Mischief



Dashboard Example - CEDWS

911 data



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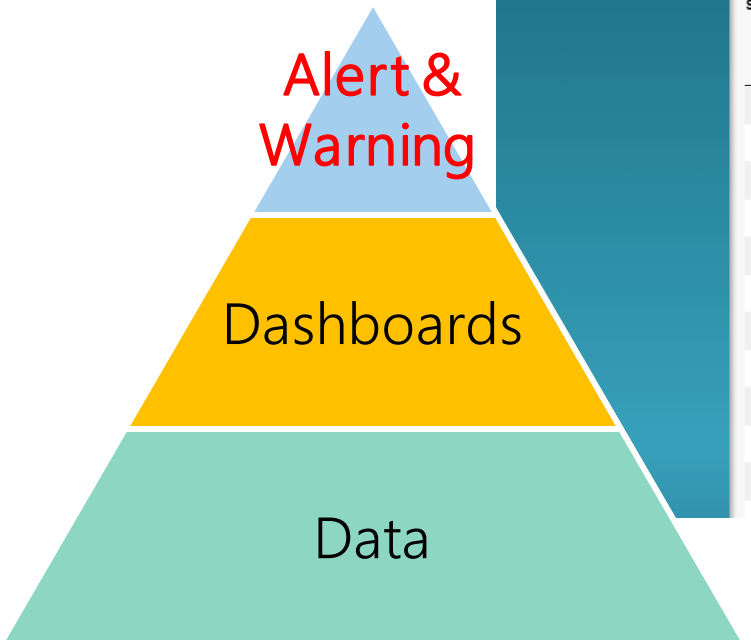
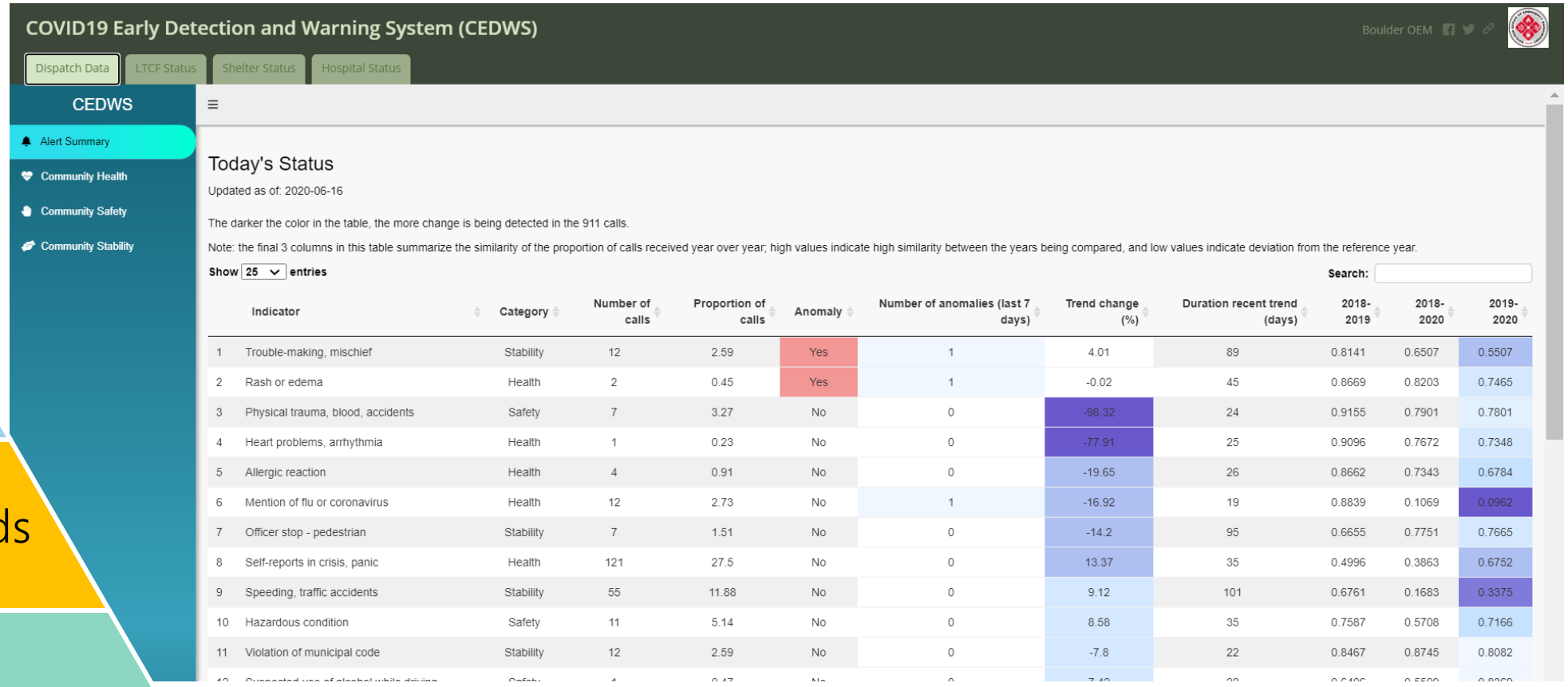
Alert & Warning - Summary

Trends





Today's Status

Updated as of: 2020-06-16

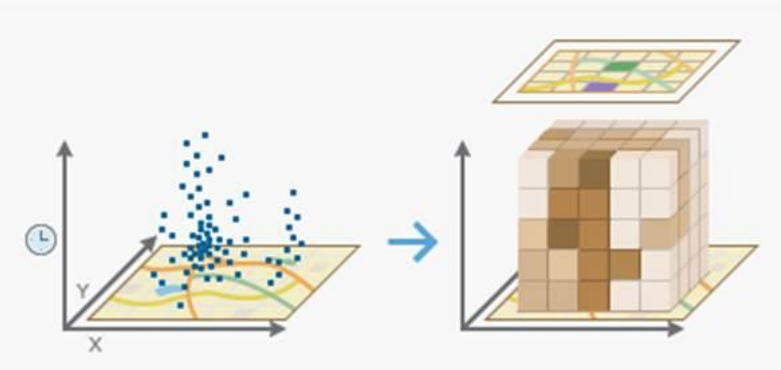
The darker the color in the table, the more change is being detected in the 911 calls.

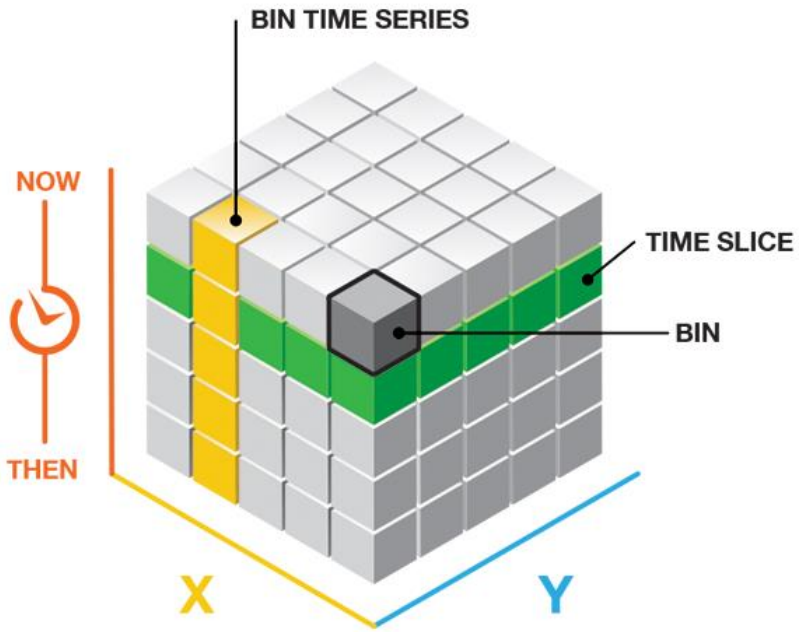
Note: the final 3 columns in this table summarize the similarity of the proportion of calls received year over year; high values indicate high similarity between the years being compared, and low values indicate deviation from the reference year.

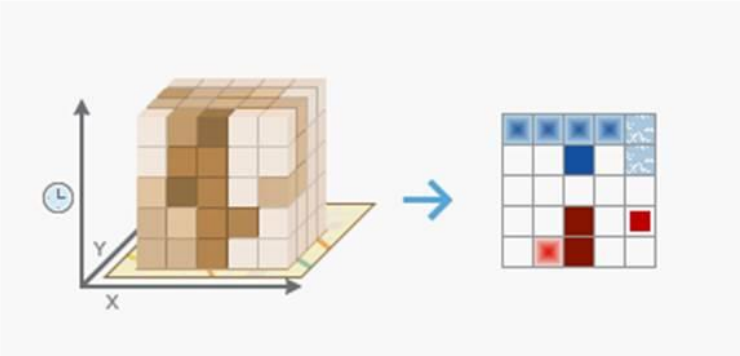
Show 25 entries Search:

	Indicator	Category	Number of calls	Proportion of calls	Anomaly	Number of anomalies (last 7 days)	Trend change (%)	Duration recent trend (days)	2018-2019	2018-2020	2019-2020
1	Trouble-making, mischief	Stability	12	2.59	Yes	1	4.01	89	0.8141	0.6507	0.5507
2	Rash or edema	Health	2	0.45	Yes	1	-0.02	45	0.8669	0.8203	0.7465
3	Physical trauma, blood, accidents	Safety	7	3.27	No	0	-98.32	24	0.9155	0.7901	0.7801
4	Heart problems, arrhythmia	Health	1	0.23	No	0	-77.91	25	0.9096	0.7672	0.7348
5	Allergic reaction	Health	4	0.91	No	0	-19.65	26	0.8662	0.7343	0.6784
6	Mention of flu or coronavirus	Health	12	2.73	No	1	-16.92	19	0.8839	0.1069	0.0962
7	Officer stop - pedestrian	Stability	7	1.51	No	0	-14.2	95	0.6655	0.7751	0.7665
8	Self-reports in crisis, panic	Health	121	27.5	No	0	13.37	35	0.4996	0.3863	0.6752
9	Speeding, traffic accidents	Stability	55	11.88	No	0	9.12	101	0.6761	0.1683	0.3375
10	Hazardous condition	Safety	11	5.14	No	0	8.58	35	0.7587	0.5708	0.7166
11	Violation of municipal code	Stability	12	2.59	No	0	-7.8	22	0.8467	0.8745	0.8082

Space Time Pattern Mining



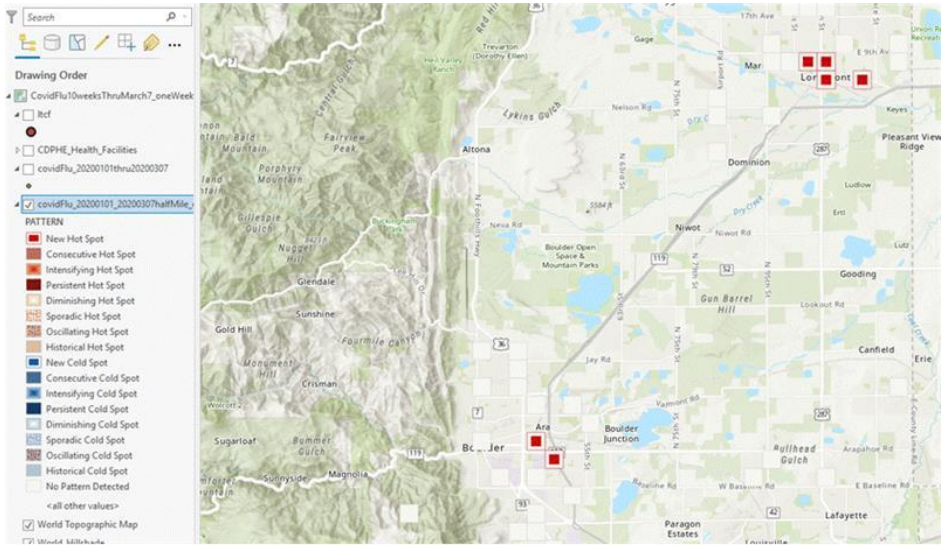


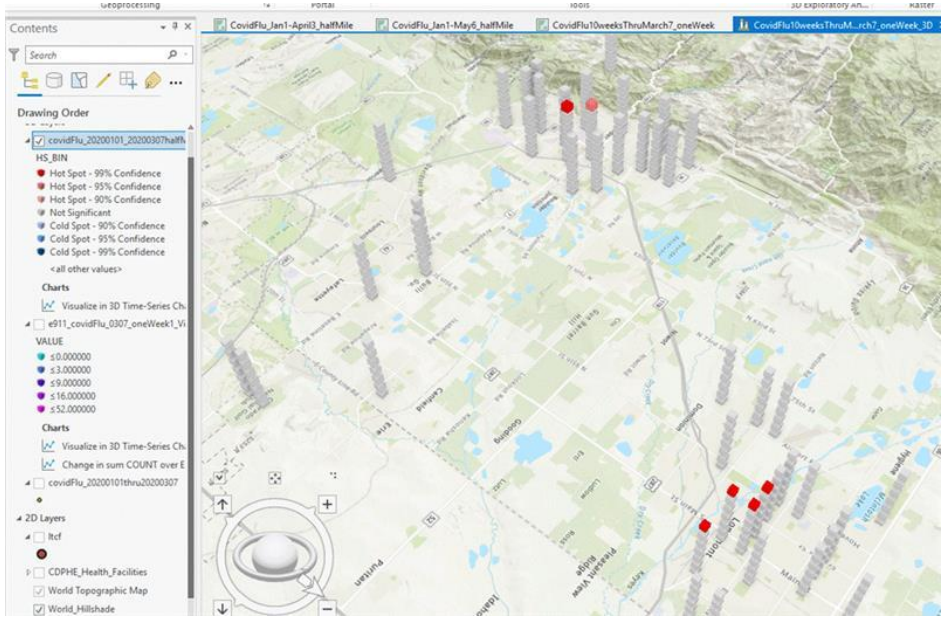


Source of graphics: esri – ArcGIS Pro Help Documentation

Emerging Hot Spot Analysis Patterns

	Pattern Name	Definition
	No Pattern Detected	Does not fall into any of the hot or cold spot patterns defined below.
	New Hot Spot	A location that is a statistically significant hot spot for the final time step and has never been a statistically significant hot spot before.
	Consecutive Hot Spot	A location with a single uninterrupted run of statistically significant hot spot bins in the final time-step intervals. The location has never been a statistically significant hot spot prior to the final hot spot run and less than ninety percent of all bins are statistically significant hot spots.
	Intensifying Hot Spot	A location that has been a statistically significant hot spot for ninety percent of the time-step intervals, including the final time step. In addition, the intensity of clustering of high counts in each time step is increasing overall and that increase is statistically significant.
	Persistent Hot Spot	A location that has been a statistically significant hot spot for ninety percent of the time-step intervals with no discernible trend indicating an increase or decrease in the intensity of clustering over time.
	Diminishing Hot Spot	A location that has been a statistically significant hot spot for ninety percent of the time-step intervals, including the final time step. In addition, the intensity of clustering in each time step is decreasing overall and that decrease is statistically significant.
	Sporadic Hot Spot	A location that is an on-again then off-again hot spot. Less than ninety percent of the time-step intervals have been statistically significant hot spots and none of the time-step intervals have been statistically significant cold spots.
	Oscillating Hot Spot	A statistically significant hot spot for the final time-step interval that has a history of also being a statistically significant cold spot during a prior time step. Less than ninety percent of the time-step intervals have been statistically significant hot spots.
	Historical Hot Spot	The most recent time period is not hot, but at least ninety percent of the time-step intervals have been statistically significant hot spots.





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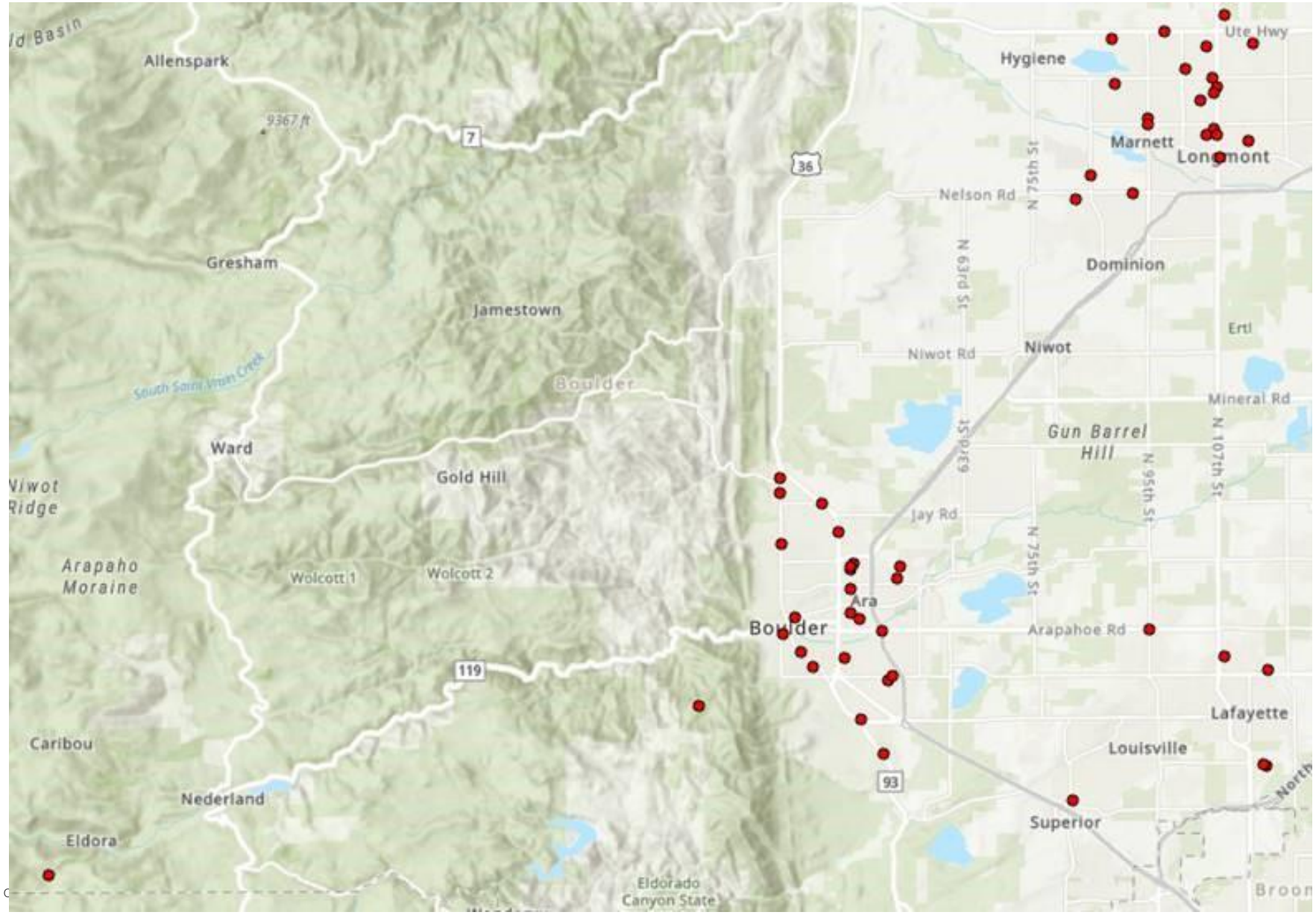
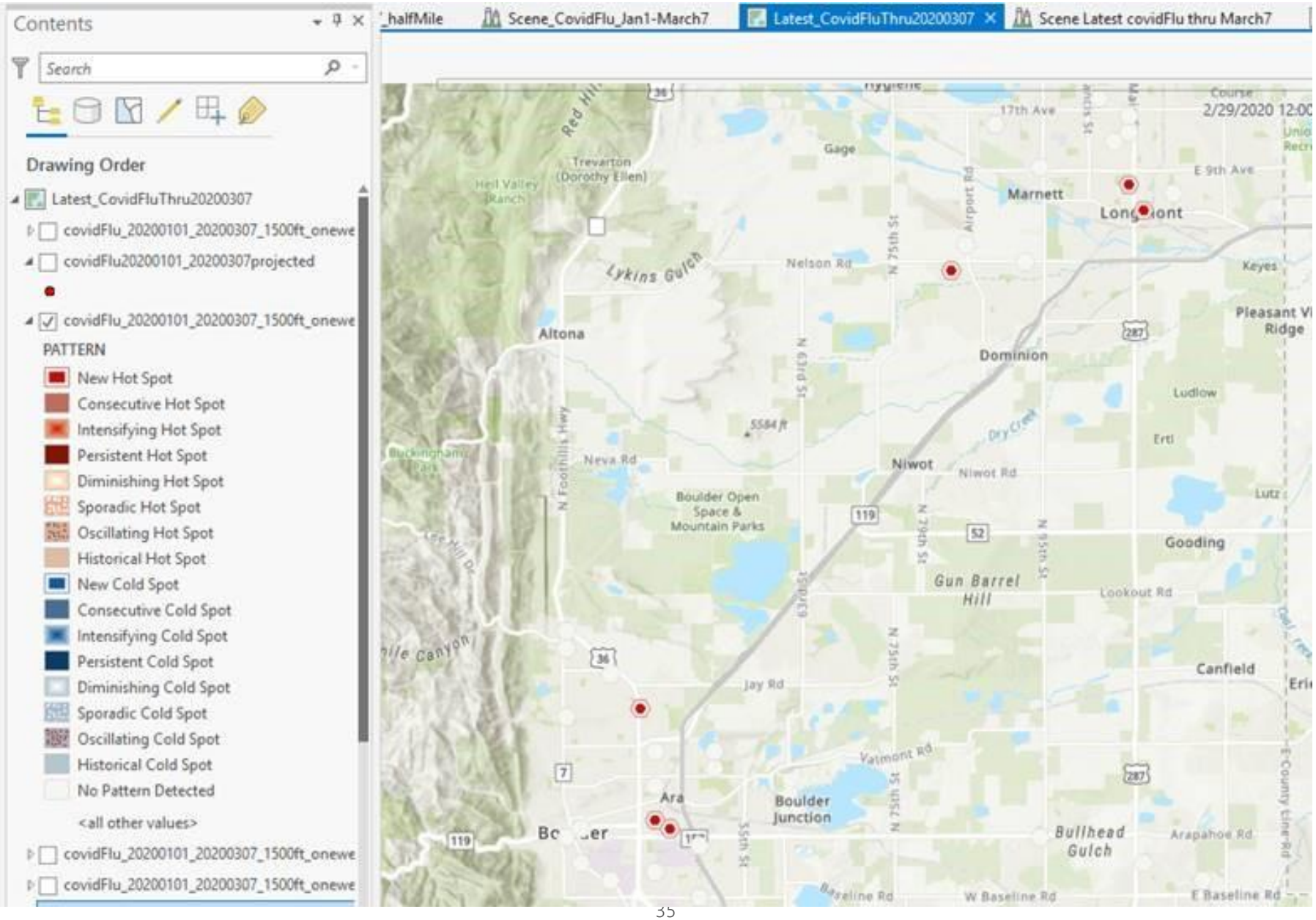
Source of pattern graphic: esri – ArcGIS Pro Help Documentation

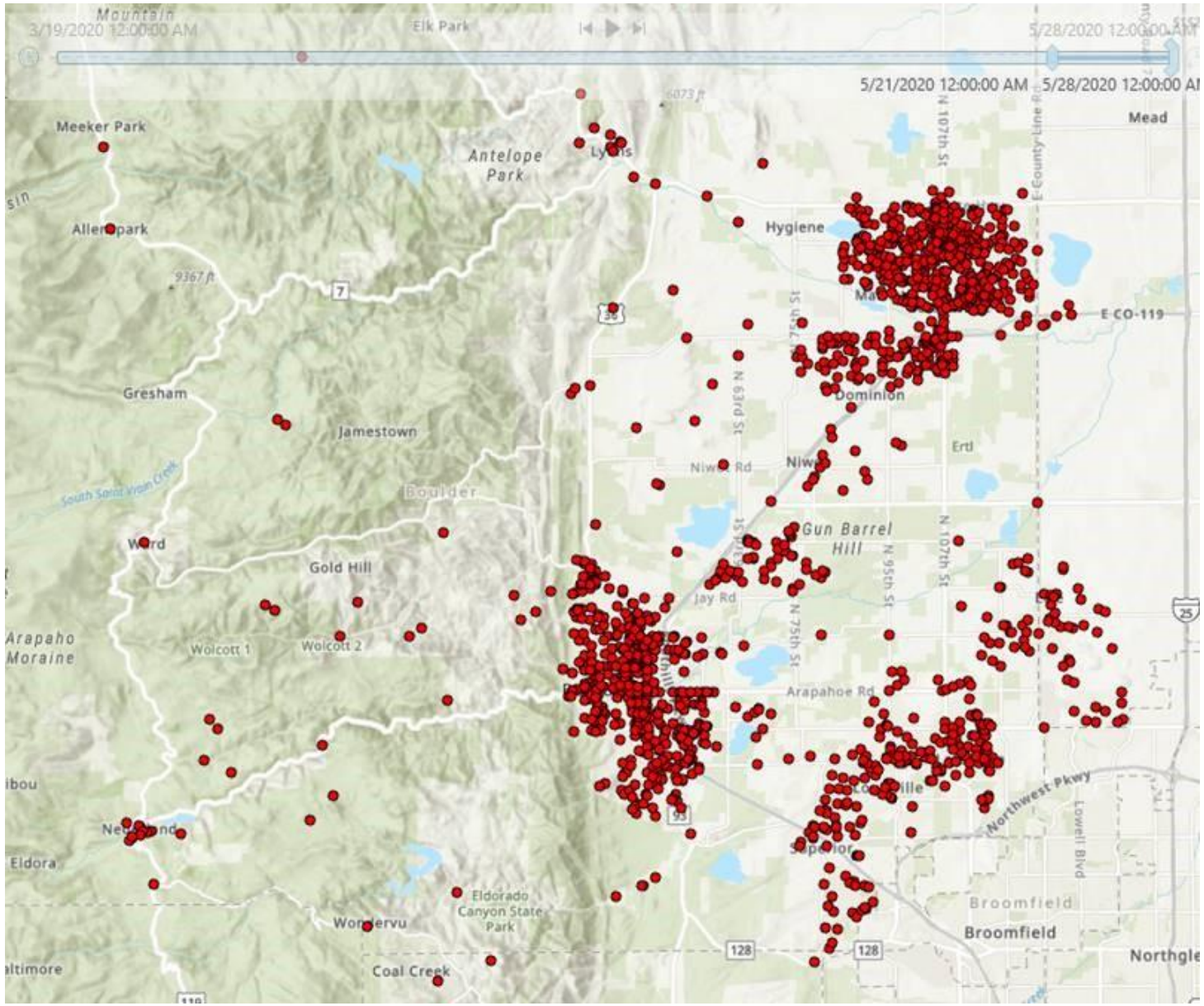
911 calls that referenced flu or coronavirus between Jan 1, 2020 and March 7, 2020



Patterns Begin To Emerges Showing New Hot Spots in Early March



911 calls that referenced flu or coronavirus between late March and early June 2020



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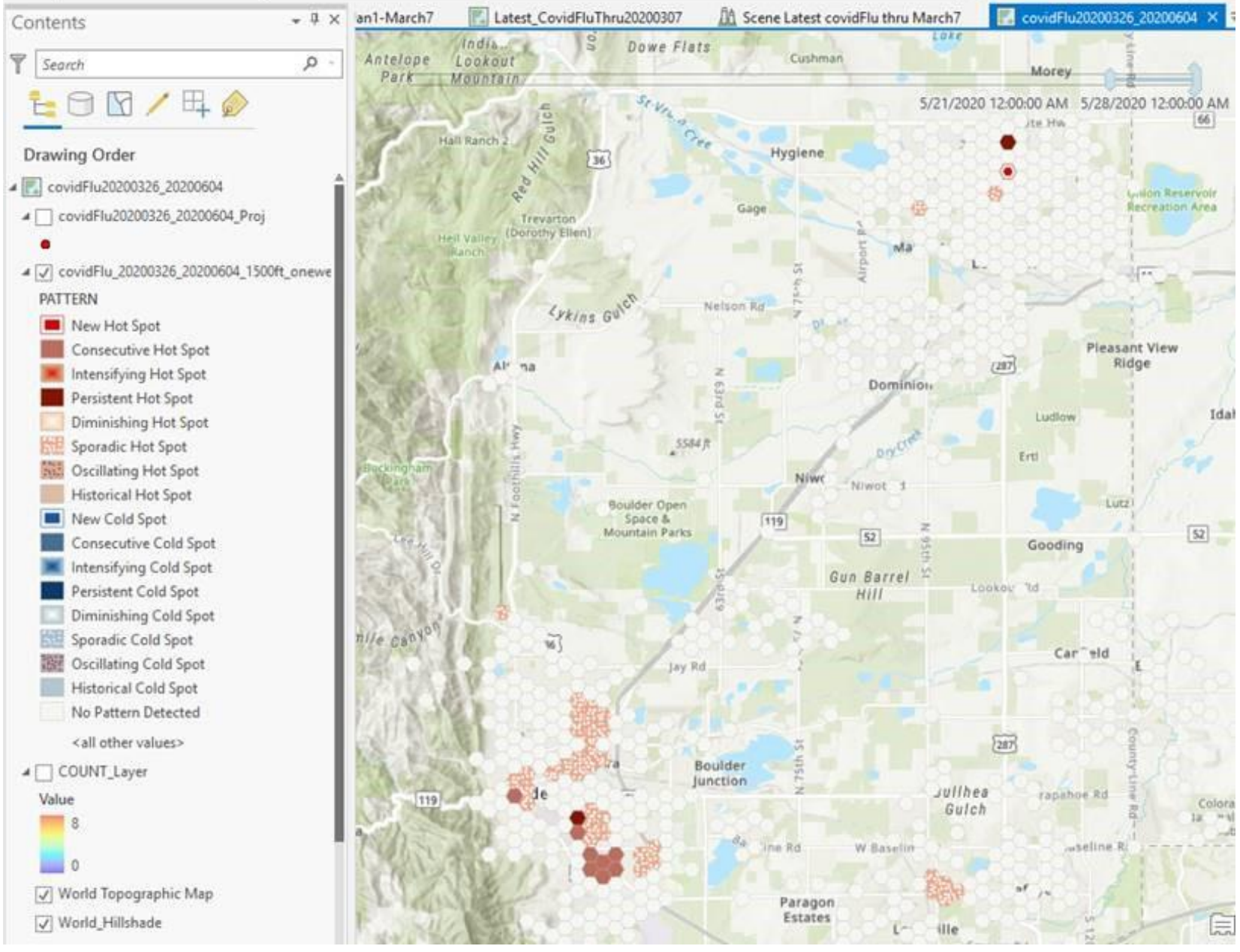
Pattern analysis late March and early June 2020



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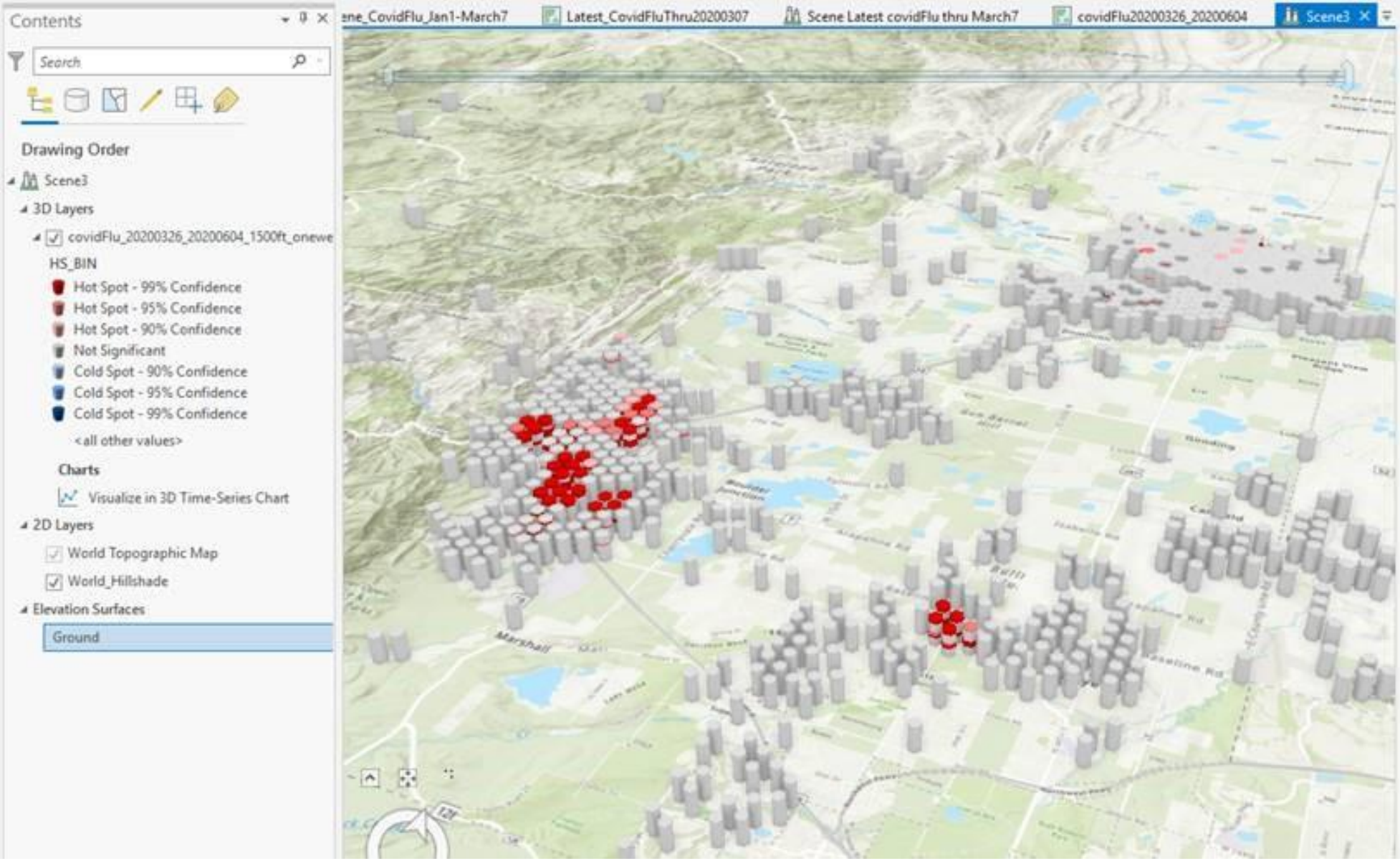
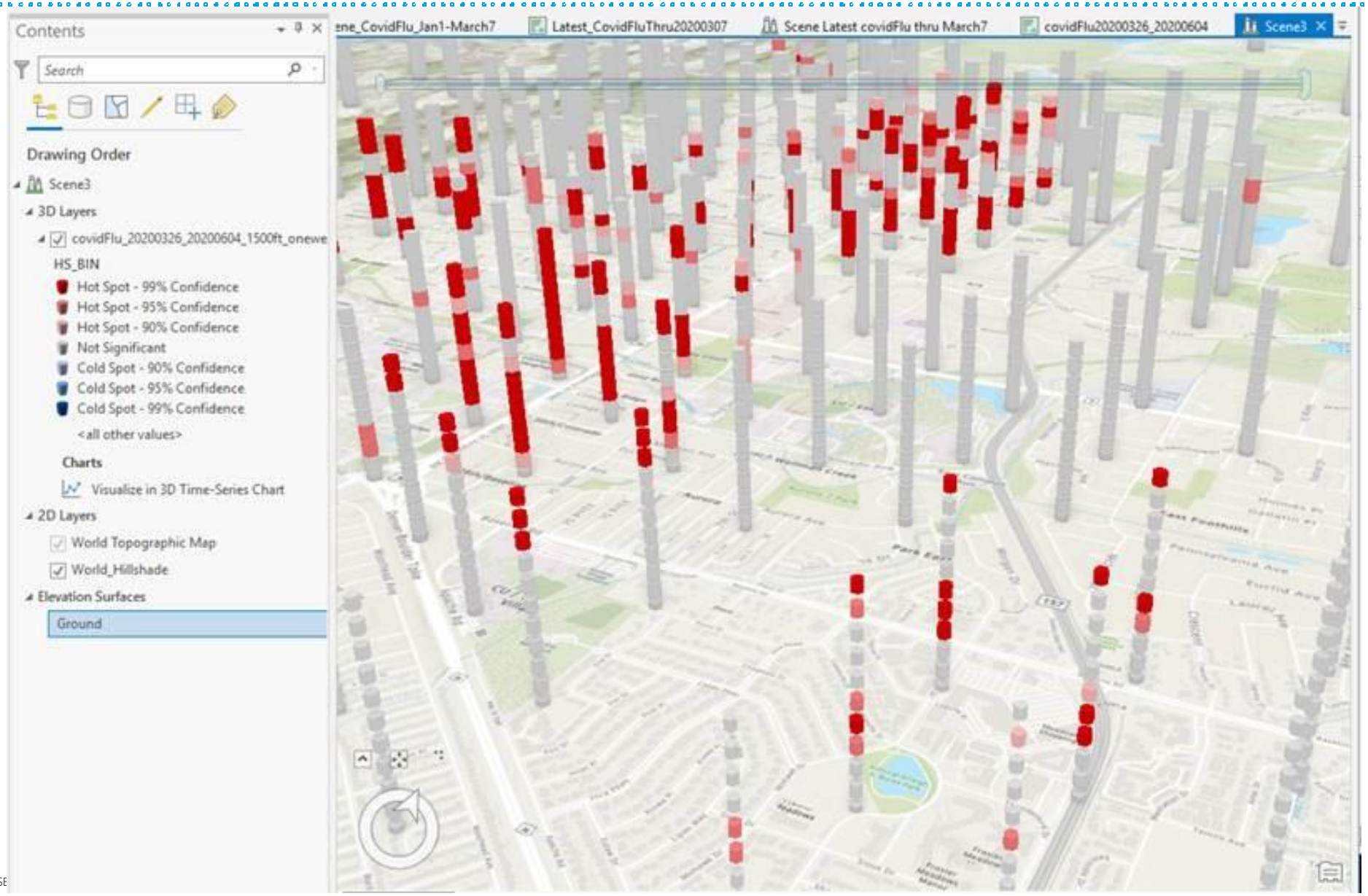
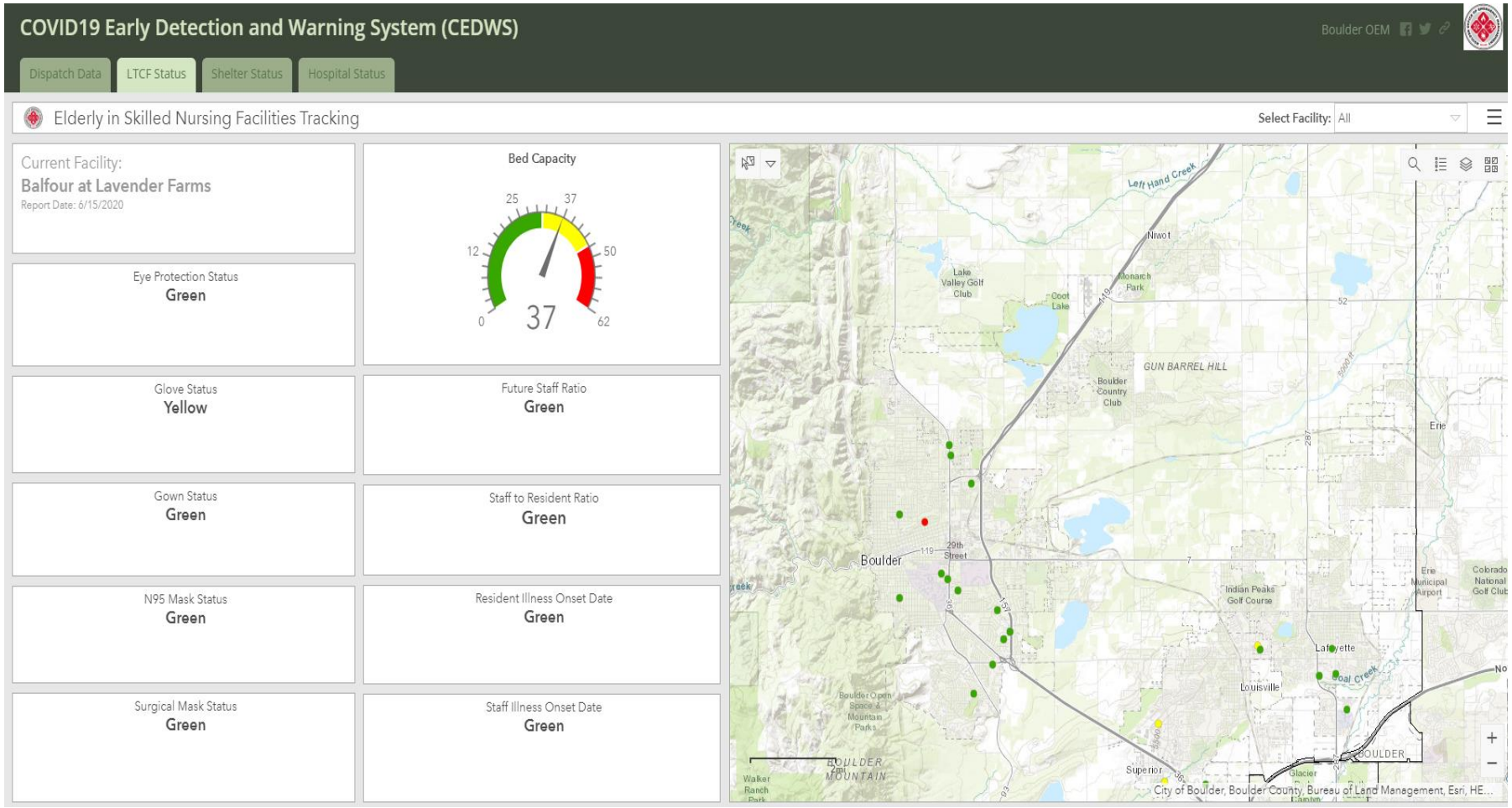
3D view of patterns over time



3D view of patterns over time



Additional system components



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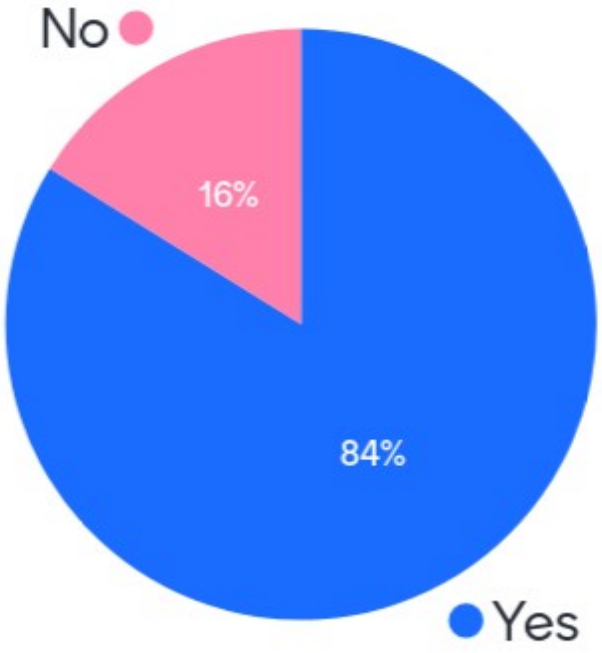
CEDWS - COVID 19 Early Detection and Warning System

Using Data for Early Detection of Emergent Threats in the Community

Did your community face a similar challenge in early detection and predicting the impact of COVID-19?

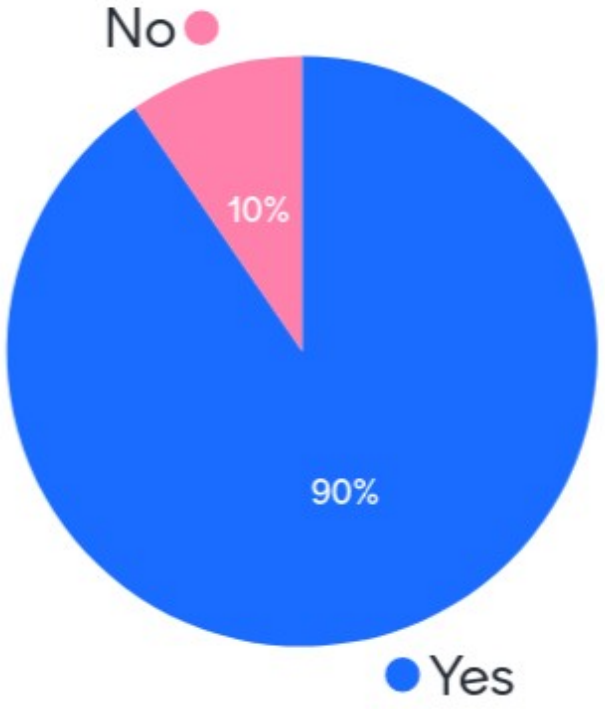
Mentimeter



68

Would data analytics and GIS similar to what Boulder used have been useful in overcoming this challenge?

Mentimeter



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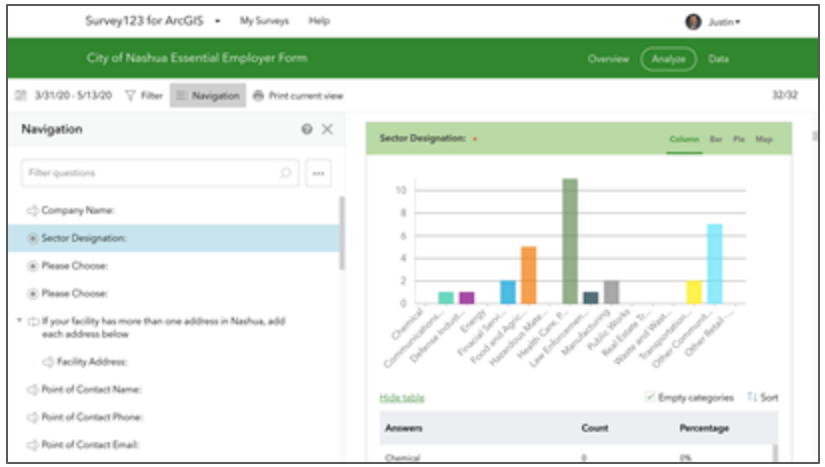
Forging Local Public Health and Emergency Management Collaboration in COVID-19 Response with Advanced Technology

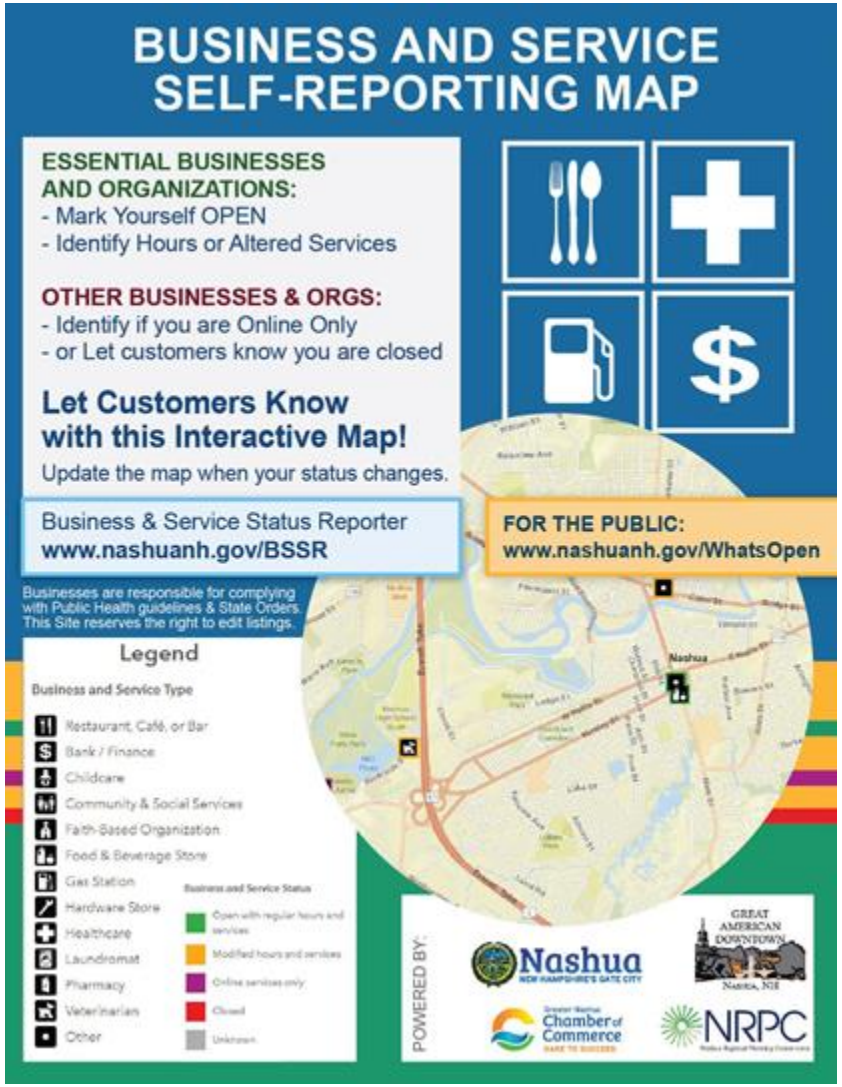
City of Nashua, New Hampshire
Justin Kates and Angela Consentino

June 23rd, 2020

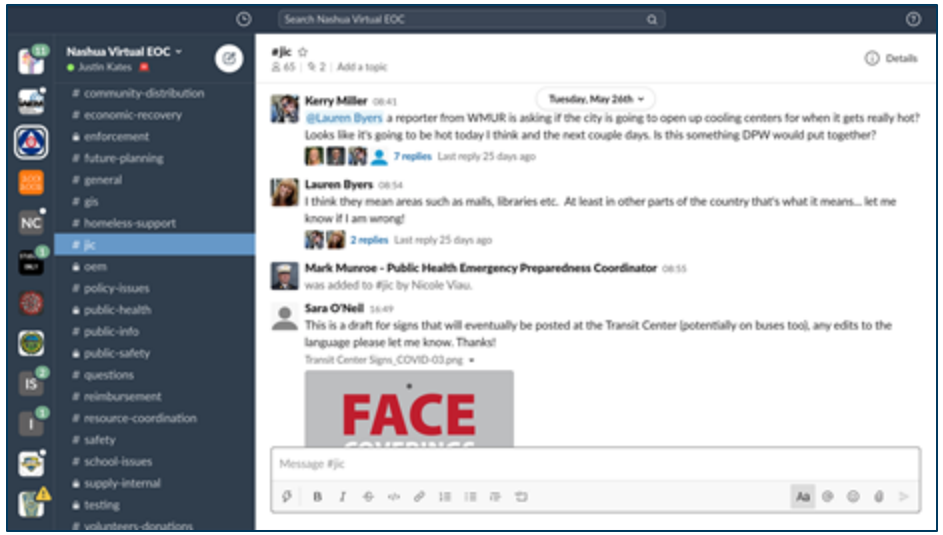
Patience & Flexibility is Key

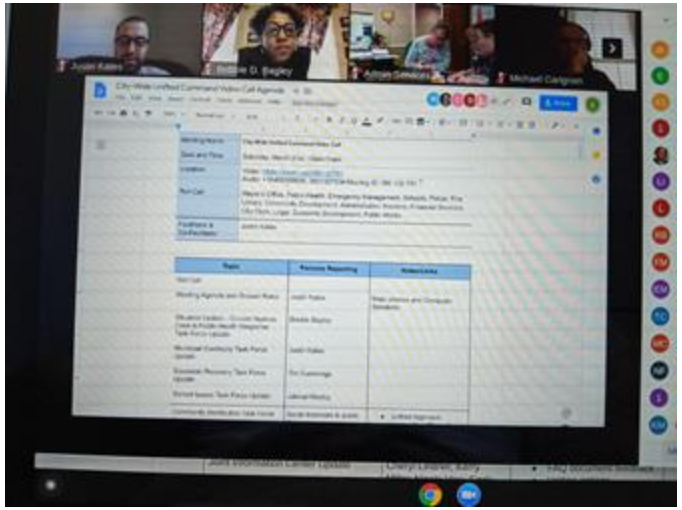
GIS Services





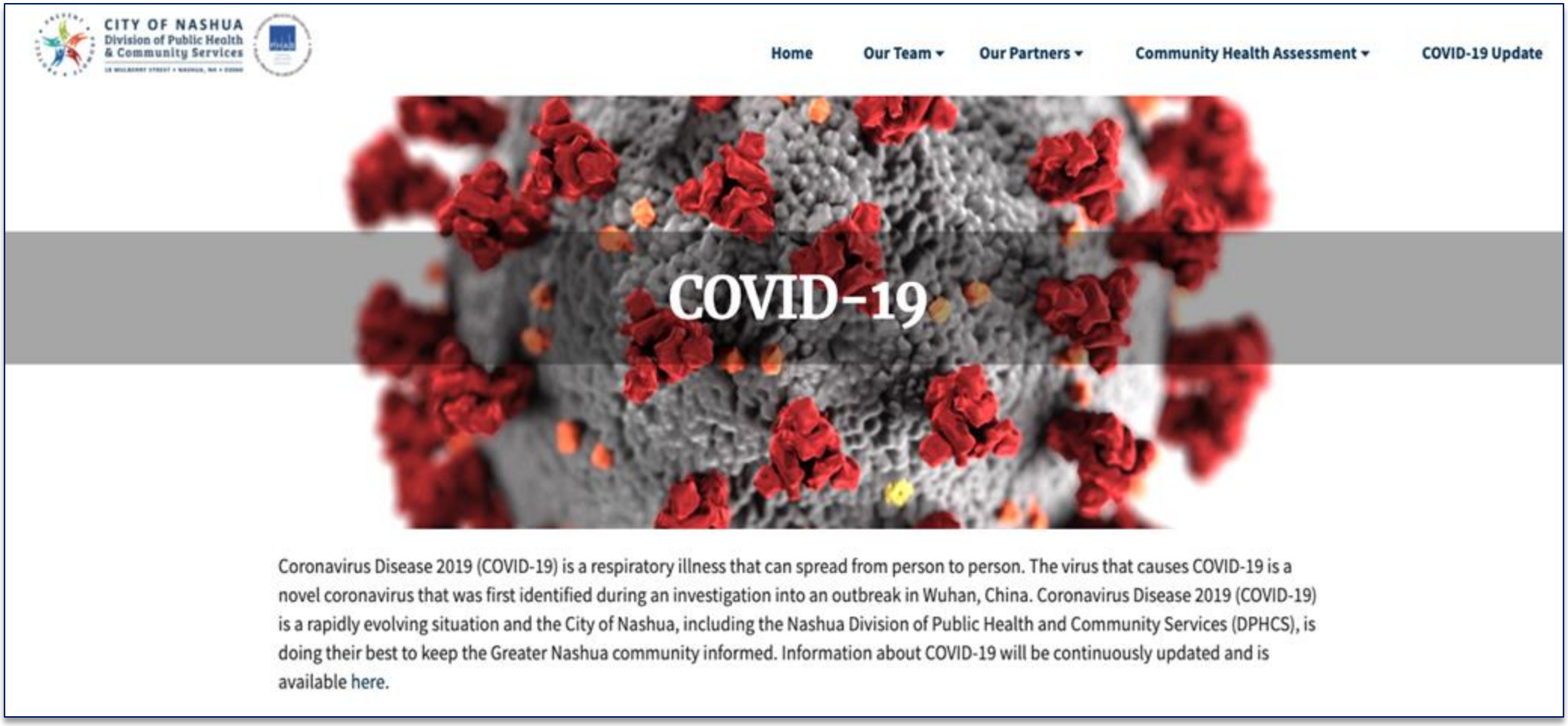
G Suite+Slack+Zoom = Virtual EOC





Greater Nashua Data Dashboard

COVID-19 Dashboard

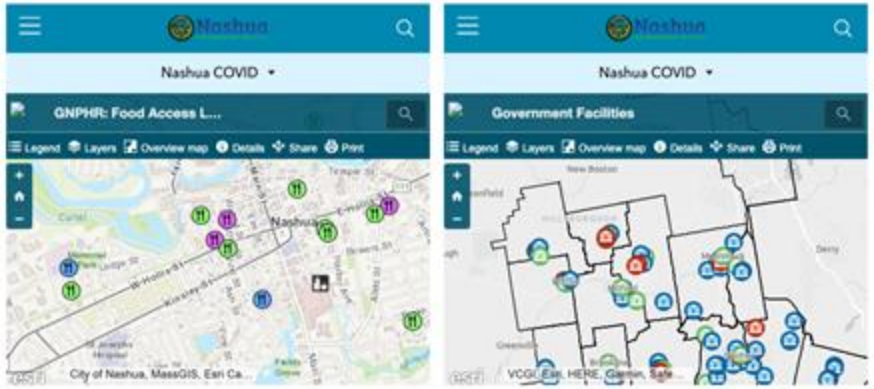


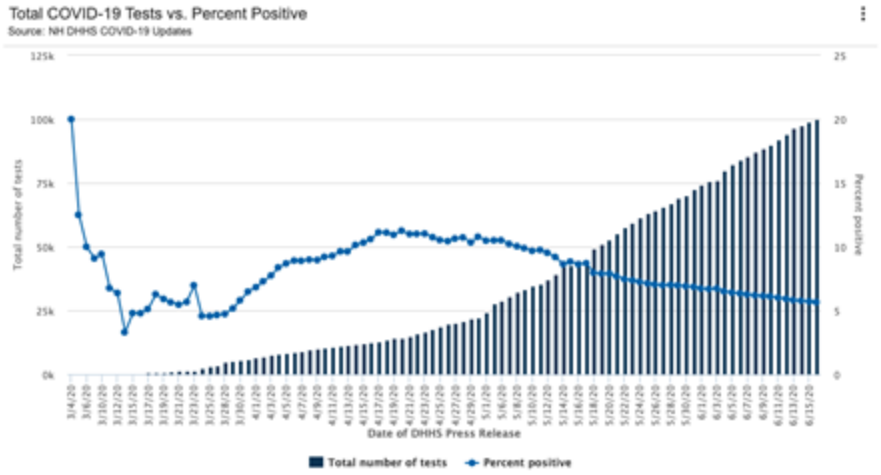
COVID-19 Dashboard

Public Information

If your organization is looking to send/post information related to COVID-19 and our region's response out to the public, we ask that you please ensure the content is reviewed and approved by our Joint Information Center (JIC). To contact the JIC, you can email the information you will be sending/posting to the public to jic@readynashua.org and someone will get right back to you. We also encourage you to follow us on social media to share and post the most current updates related to COVID-19 and the City's response.

Facebook / Twitter / Instagram / YouTube





New Hampshire Cases Deceased

Source: NH DHHS COVID19 Updates

6 %

New Hampshire Cases Hospitalized

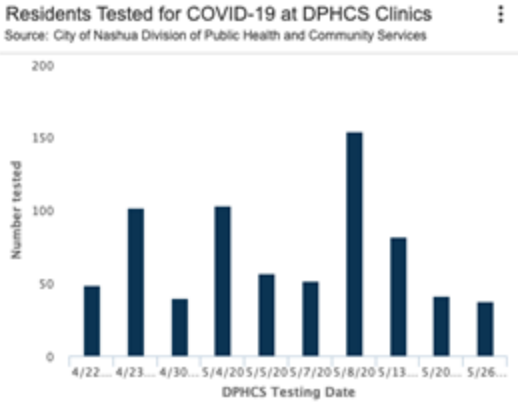
Source: NH DHHS COVID19 Updates

10 %

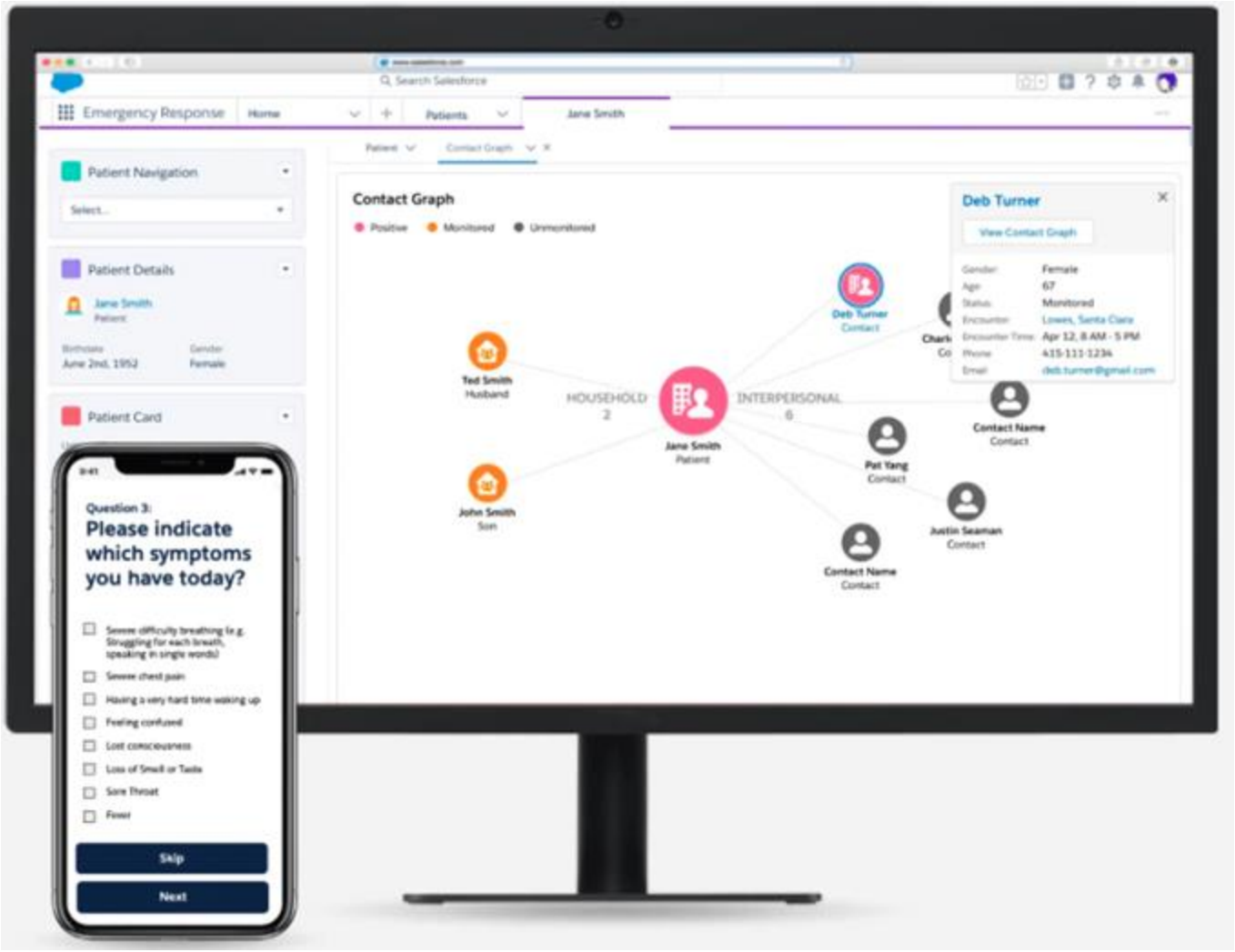
New Hampshire Cases Recovered

Source: NH DHHS COVID19 Updates

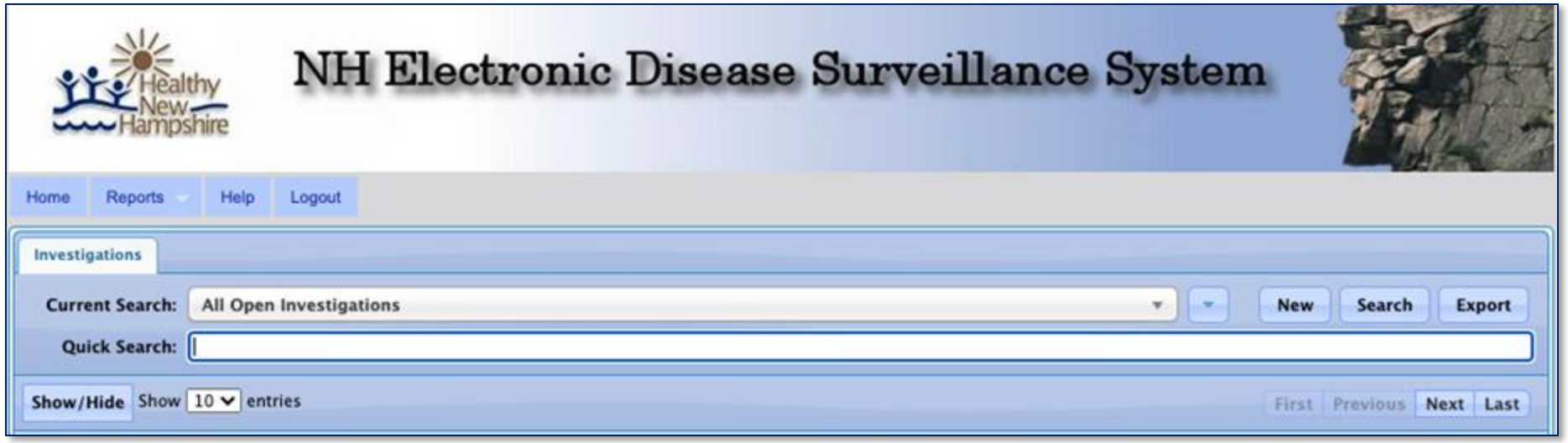
75 %



Salesforce Contact Tracing



Disease Surveillance System



Lessons Learned

- This technology has greatly enhanced our city-wide response to COVID-19, but an ongoing challenge has been ensuring that all users are properly trained and can effectively utilize the tools.
- City and community-wide collaboration and communication has been the key to responding effectively to a rapidly evolving situation.
- Consistently updating public facing platforms has been crucial in gaining public trust and maintaining transparency.

Questions?

Justin Kates

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603-722-0288

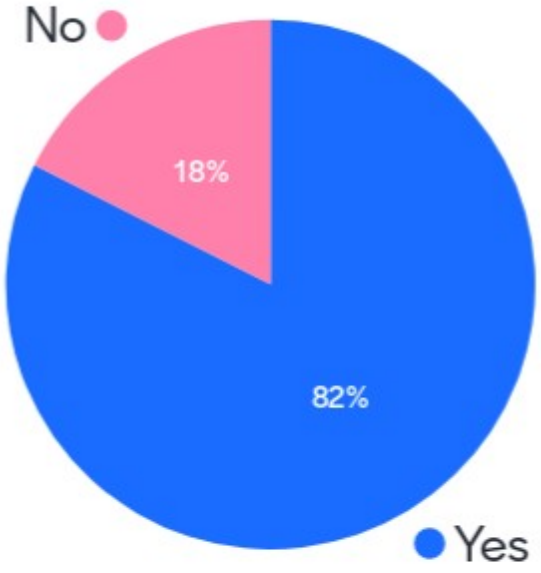
Angela Consentino

ConsentinoA@NashuaNH.gov

603-589-4542

Did your community face a similar challenge in collaborating and sharing between public health and emergency management?

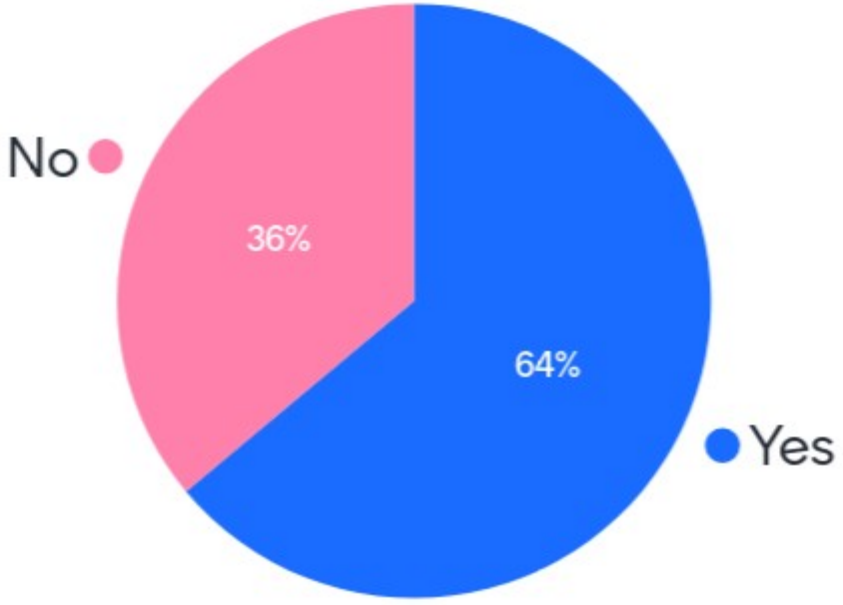
Mentimeter



57

Would GIS and technology solutions like the ones shared by Nashua have been useful in overcoming this challenge?

Mentimeter



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Statewide PPE Supply and Distribution Management Using Location-Based Technology

Alexis Gieseker, State of Missouri

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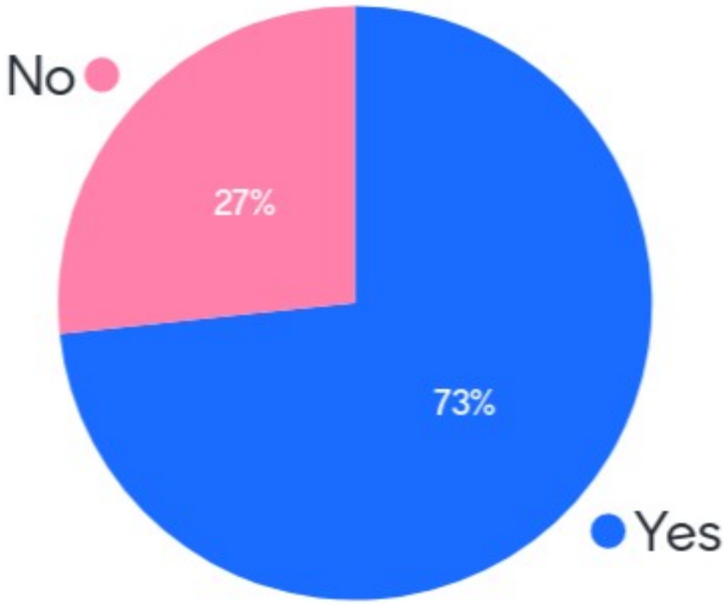
Did your community face a similar challenge in managing and distributing PPE supplies?

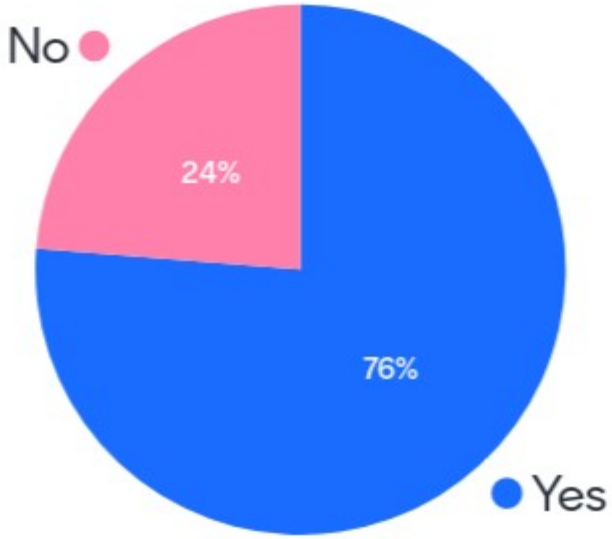
Mentimeter



45

Would GIS and technology solutions similar to what Missouri used have been useful in overcoming this challenge?

Mentimeter



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05

Community Discussion: Key Issues and Capability Gaps

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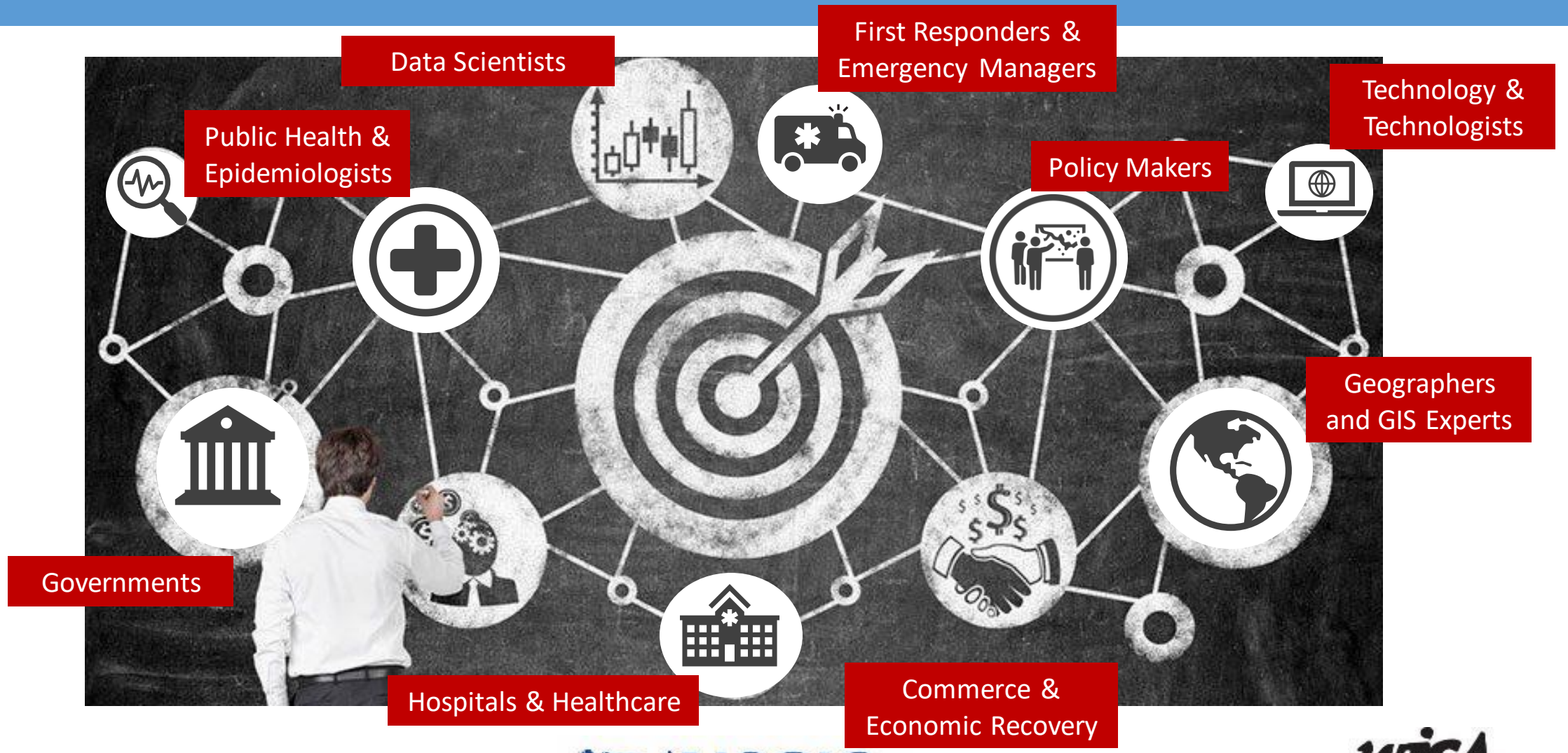
Unifying Efforts

Establish a foundation for a data-driven public health and emergency management system



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Capability Gaps

Response to COVID-19 thus far has uncovered a multitude of **capability gaps** directly related to data, technology, information management, and sharing:

1. **Leadership, Governance Structure, and Coordination** Among Local, State, Tribal, and Federal Agencies for Pandemic Preparedness, Response, and Recovery
2. Clearly Defined and **Standardized Information & Data Needs** for Decision Making in Response to a Pandemic
3. **Shared Understanding Among Leaders and Managers** Regarding Availability and Use of Data Collection, Analysis, and Dissemination Solutions Available
4. **Common Language/Lexicon and Data Schemas** for Pandemic Information Needs, Data Collection, and Information Management Workflows
5. Dynamic **Data Sharing, Automated Connections, and Integration** to Minimize Manual Data Entry and Reduce Duplication of Effort
6. Guidance on How to **Navigate Restricted Data Access and Sharing** Among Public Health, Emergency Management, and Others
7. Common Knowledge and Experience Among Health and EM with **Data and Modeling Outputs** Needed in Pandemic Response and Recovery

Challenges Identified by Key Functional Areas

Early Detection & Warning

- Access to reliable and consistent data sources for early detection
- Replicable data analysis models for early detection and predictive impact analysis

Control Spread & Mitigate Impact

- Testing availability and site locations
- Contact tracing analysis and tracking
- Vaccine availability and site locations
- Common understanding of appropriate use for different social distancing & mobility data sets

Monitoring Impact & Case Reporting

- Standard schema for reporting
- Consistent participation in daily reporting
- Level of granularity in case data
- PII and HIPPA associated data access and sharing restrictions

Health / Medical Capability Reporting

- Clearly defined information & data needs
- Standard schema for reporting
- Leveraging automated feeds & API connections
- Streamlined data collection to reduce duplication & manual data entry

PPE Supply and Distribution

- Clearly defined information & data needs on PPE supplies
- Standard schema for reporting PPE supply shortfalls
- Consistent workflow for requesting, managing, and tracking PPE supplies

Food & Essential Supply and Management

- Awareness of available data
- Data sets built and launched during response
- Standard analysis to determine demand & need
- Predictive model on supply vulnerability
- Common workflow for community-level status reporting on essential services

Economic Impact, Reopening, and Recovery

- Standard analysis and models for economic impact at different scales
- Common workflow for community-level economic injury data collection & analysis
- Availability of dynamic data on economic impact and recovery indicators
- Consistent model to assessing reopening readiness

Fireside Chat – Question 1

- To what extent did you use data analytics or GIS to support decision making during COVID-19 response?
- What was your greatest success?

Quickly answer questions using the QR Code or link.

Menti.com

Code: **87 99 17**

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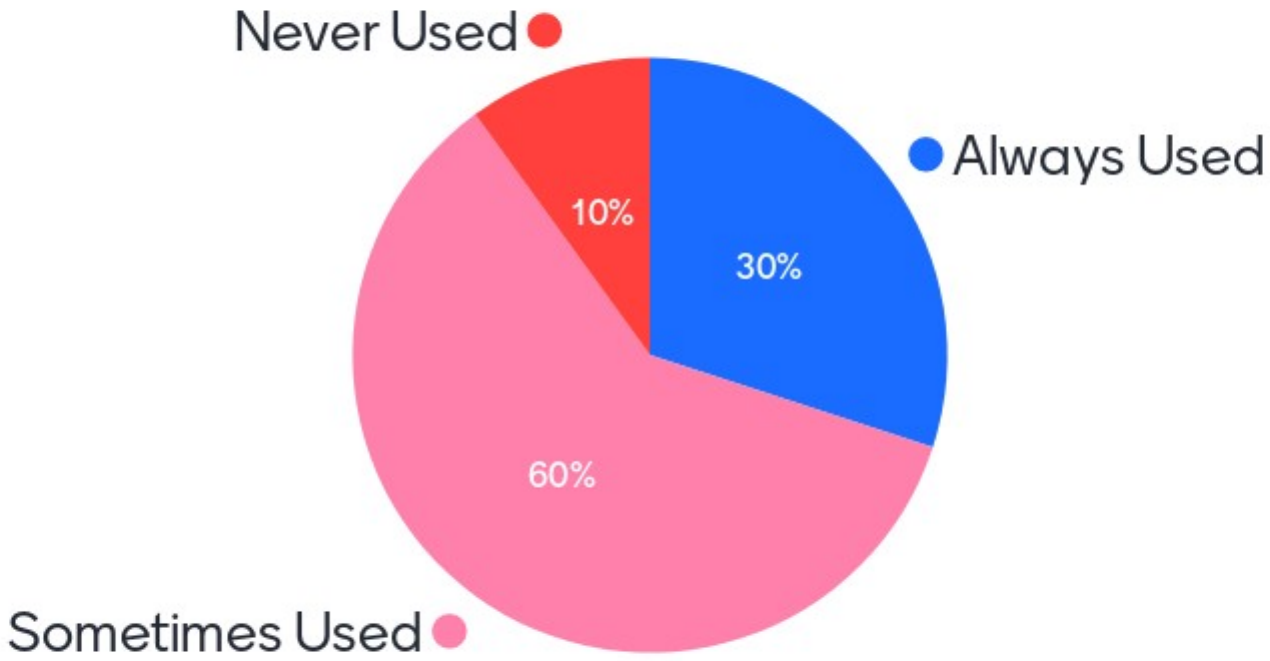
To what extent did you use data analytics or GIS to support decision making during COVID-19 response?

Mentimeter



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Fireside Chat – Question 2

- Clearly technology & GIS staff were actively engaged and supporting your agency's COVID-19 operations…
- How were you able to build bridges and alliances among the different agencies and disciplines in achieving a more effective response?

Quickly answer questions using the QR Code or link.

Menti.com

Code: **87 99 17**

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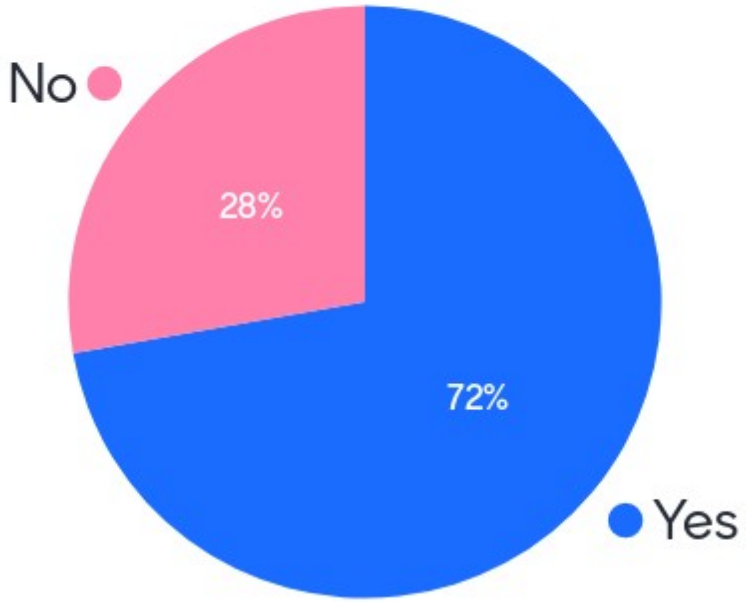
Were technology & GIS staff actively engaged and supporting your agency's COVID-19 operations?

Mentimeter



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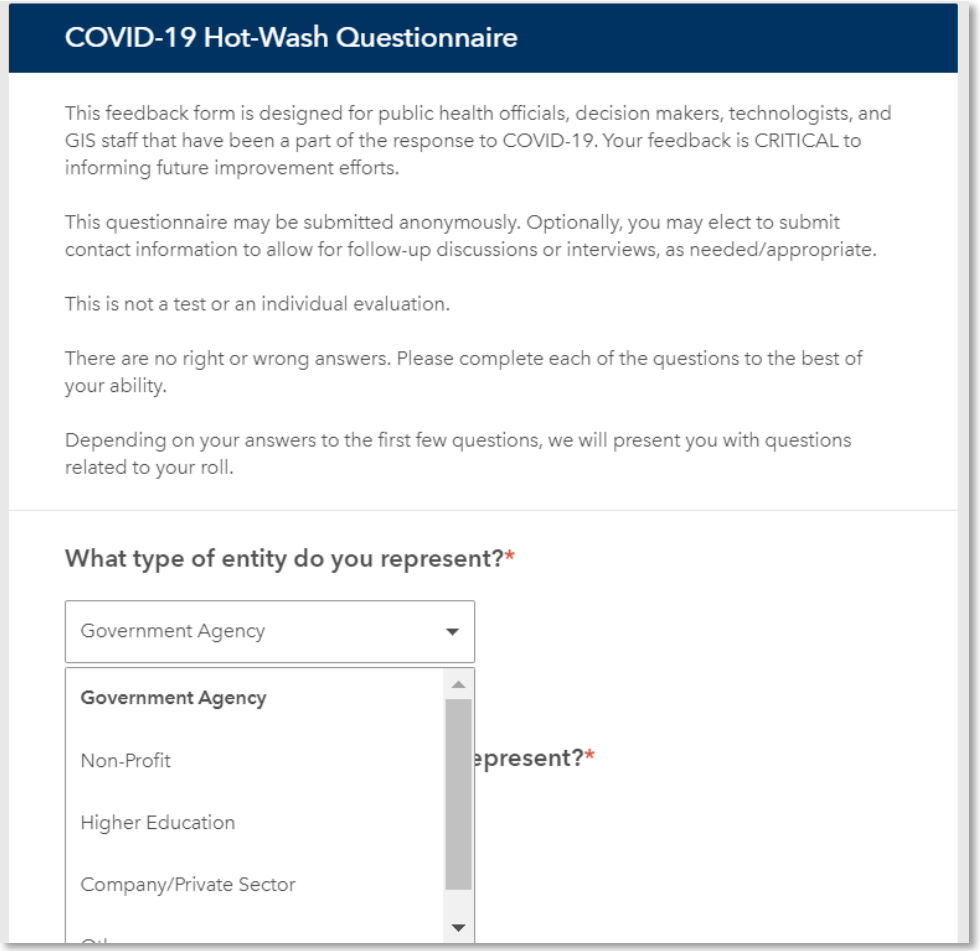
06

Take Action and Contribute

Amplify Your Voice: COVID-19 Tech & GIS Questionnaire

Provide ***critical insight in your experience*** using location-based technology, GIS, and data analytics during COVID-19

- Ensure AAR and Improvement Plan is ***data-driven***
- Just 8-10 minutes to complete
- Help ***get the word out*** to participate
- You'll receive an email with link to questionnaire
- ***Opens Thursday, June 25!***



COVID-19 Hot-Wash Questionnaire

This feedback form is designed for public health officials, decision makers, technologists, and GIS staff that have been a part of the response to COVID-19. Your feedback is CRITICAL to informing future improvement efforts.

This questionnaire may be submitted anonymously. Optionally, you may elect to submit contact information to allow for follow-up discussions or interviews, as needed/appropriate.

This is not a test or an individual evaluation.

There are no right or wrong answers. Please complete each of the questions to the best of your ability.

Depending on your answers to the first few questions, we will present you with questions related to your roll.

What type of entity do you represent?*

Government Agency

Government Agency

Non-Profit

Higher Education

Company/Private Sector

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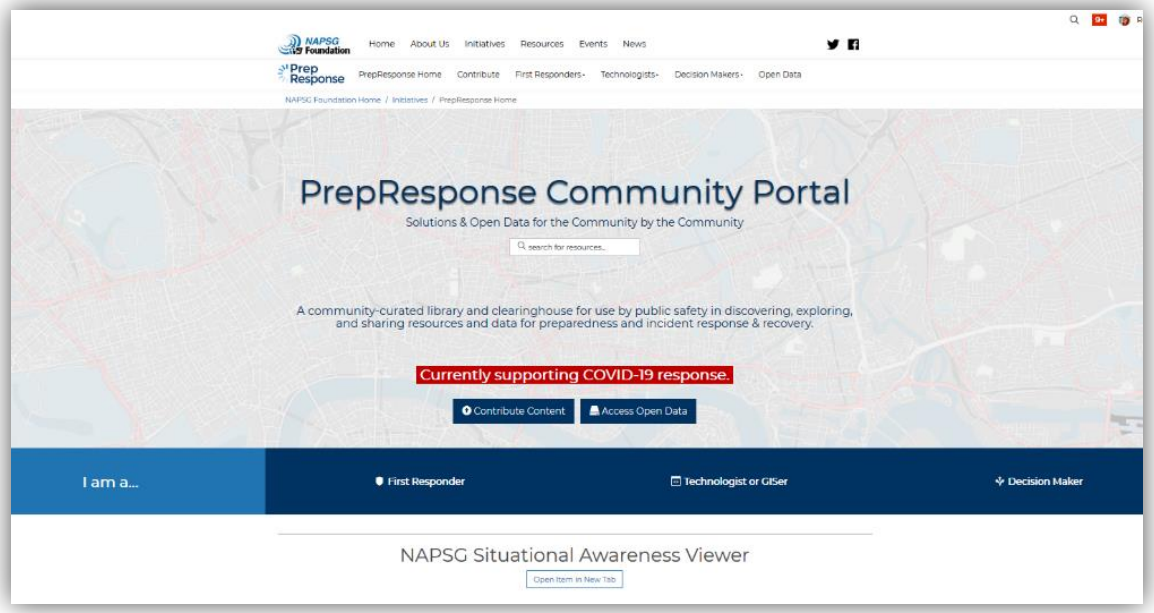
Portal: Currently Supporting COVID-19

Solutions & Open Data for the Community by the Community

- **A community-curated library and clearinghouse -** for use by public safety in **discovering, exploring, and sharing** resources and data for preparedness and incident response & recovery.



Link:

https://prep-response-portal.napsgfoundation.org/

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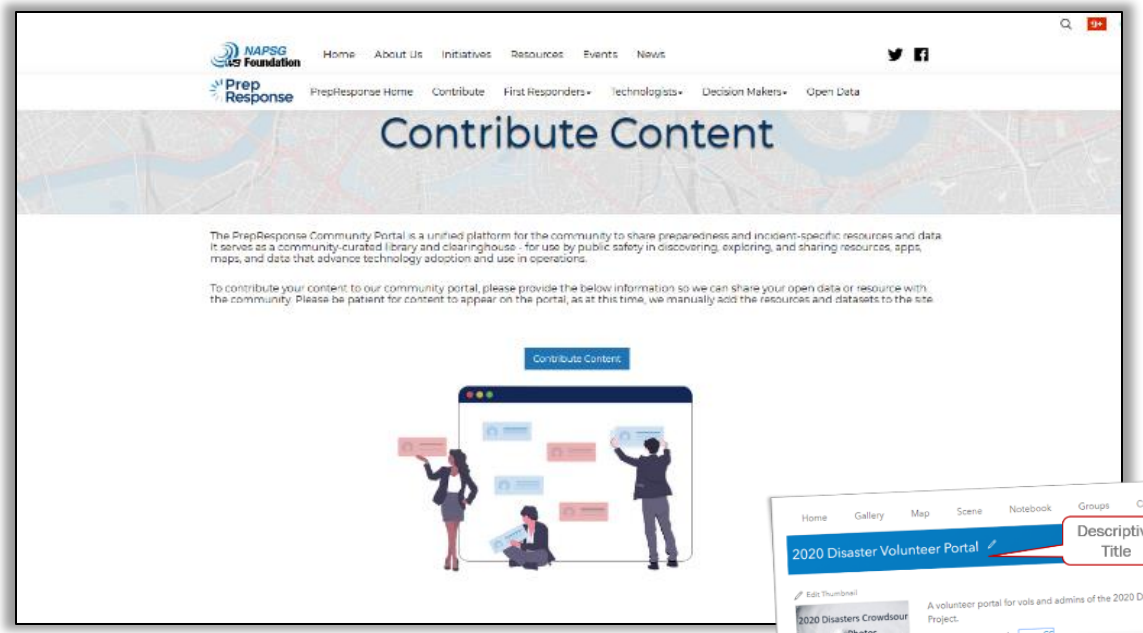
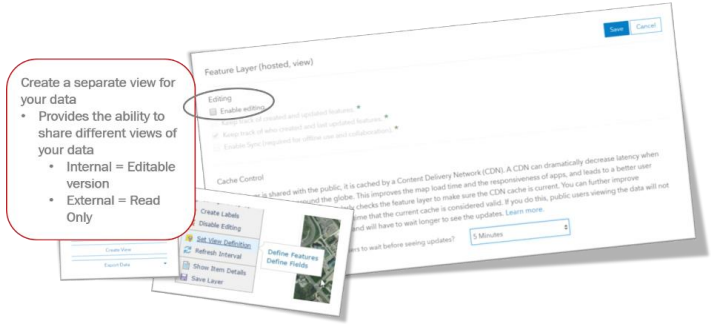
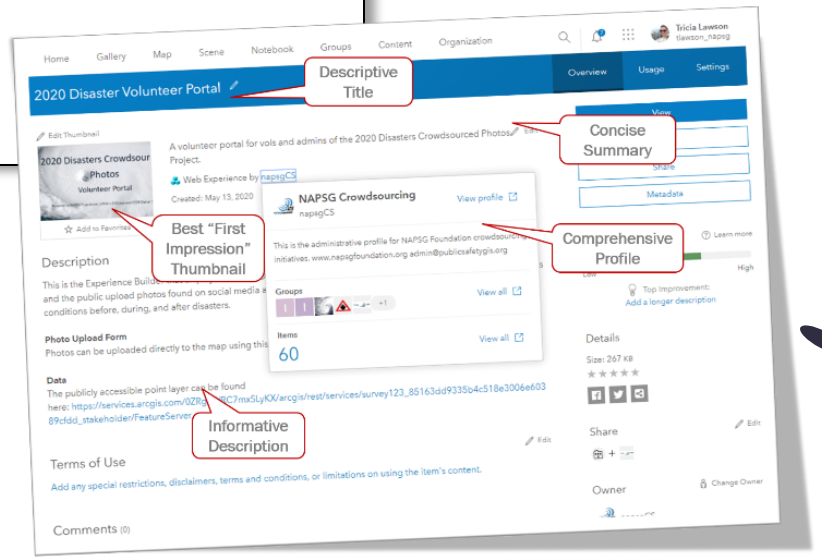
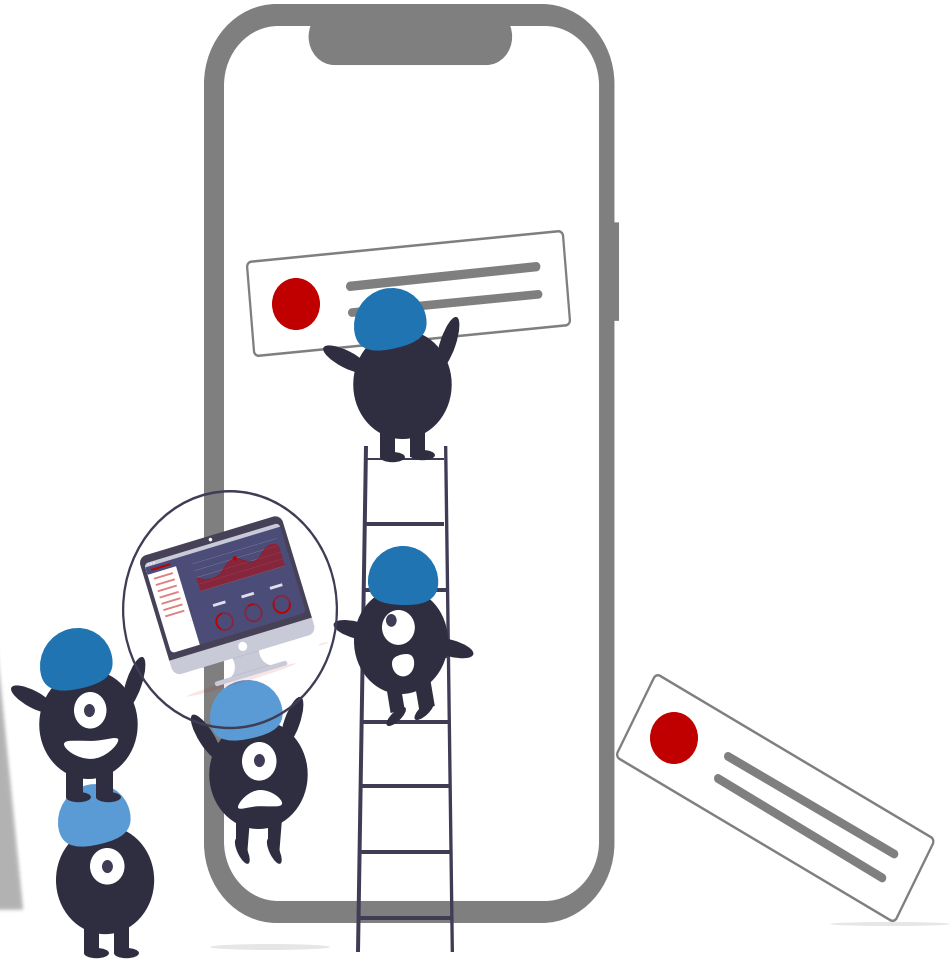
Portal: Community Engagement









Prep Response

Questions

Submit your questions in the Q&A feature in Zoom

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Next Steps! COVID-19 Tech & GIS AAR

June 2020
Conduct first virtual engagement session for public safety stakeholders

June 2020
Develop and release a COVID-19 Technology & GIS Hot Wash Questionnaire

August 2020
Conduct second virtual engagement session for public safety stakeholders

September 2020
Release version 1.0 COVID-19 Technology & GIS AAR and Improvement Plan

Ongoing
Coordinate with the FEMA / HHS COVID-19 after-action team on integration of findings

1

Look Out for the Email on Thursday, June 25!

2

You're Already Registered, So Stay Tuned!

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Upcoming Events

Registration Open!
https://www.napsgfoundation.org/events/

2020 Virtual Events

- **June 30** – EM Geo Forum: Get Tech Ready! Tools for Hurricane Readiness
  - Register @ https://conta.cc/2YKpQwa
- **July 28 –** PrepTechTalk: Applying Drones & Imagery for Disaster Management & Resiliency
- **August 13** – PrepTechTalk: The Indoor Frontier: Exploring Emerging Technologies for First Responder in the Indoor Environment
- **September** 10 – PrepTechTalk: Verdict is Out: Decrypting Risk, Resilience, Social Vulnerability Data & Indices

2021 In-Person Events

Call for Topics Open!

NAPSG Foundation

Original artwork by
Tom Fraser
NYS GPO

Thank You

Sincerely