

# *Moving from Response to Recovery with GIS*



**Get Answers:** Questions will be answered at the end.  
You can submit them at anytime through the Q&A module.



**On-Demand:** The recording will be posted shortly after the webinar.



**Start time:** The webinar will start at 7:00 am PDT



**Contact us:** For anything else, please email us:  
[lpeters@esri.com](mailto:lpeters@esri.com)

Total Confirmed  
**6,694,512**

Confirmed Cases by Country/Region /Sovereignty

1,876,922	US
614,941	Brazil
449,256	Russia
284,730	United Kingdom
240,978	Spain
234,013	Italy
233,576	India
189,569	France
184,924	Germany
183,198	Peru
167,410	Turkey
167,156	Iran
118,292	Chile
105,680	Mexico
95,748	Saudi Arabia



Global Deaths

**392,321**

88,496 deaths	US
40,344 deaths	United Kingdom
34,021 deaths	Brazil
33,774 deaths	Italy
29,068 deaths	France
27,134 deaths	Spain
12,545 deaths	Mexico

US State Level Deaths, Recovered

30,174 deaths, 66,756 recovered	New York US
11,970 deaths, 27,231 recovered	New Jersey US
7,201 deaths, recovered	Massachusetts US
5,832 deaths, 51,019 recovered	Pennsylvania US
5,736 deaths, recovered	Illinois US
5,595 deaths, 38,099 recovered	Michigan US
4,454 deaths, recovered	California US

# Moving from Response to Recovery with GIS

Cumulative Confirmed Cases | Active Cases | Incidence Rate | Case-Fatality Ratio | Testing Rate | Hospitalization Rate

**188**  
countries/regions

Lancet Inf Dis Article: [Here](#). Mobile Version: [Here](#).  
Lead by JHU CSSE, Technical Support: [Esri Living Atlas team](#) and JHU APL. Financial Support: JHU and NSF. Click [here](#) to donate to the CSSE dashboard team, and other JHU COVID-19 Research Efforts. [FAQ](#). Read more in this [blog](#). [Contact US](#).

Last Updated at (M/D/YYYY)  
**6/5/2020, 8:33:18 AM**



## Today's Presenters



**Linda Peters**  
**Global Manager**  
**Official Statistics**



**Katherine Smyth**  
**Solution Engineer**  
**National Government**



**Brent Jones**  
**Global Manager**  
**Land Records and**  
**Cadastre**



**Calvin Kwon**  
**Solution Engineer**  
**National Government**

# **Objective:**

**To demonstrate the value of GIS as we move to re-open with a focus on the application of spatial data for decision making.**

# *Moving from Response to Recovery with GIS*

## Agenda

- Disaster Response and GIS
- Business Continuity Recovery and Re-Opening
- Demonstrations
- COVID-19 Support and Solutions
- Open Q/A



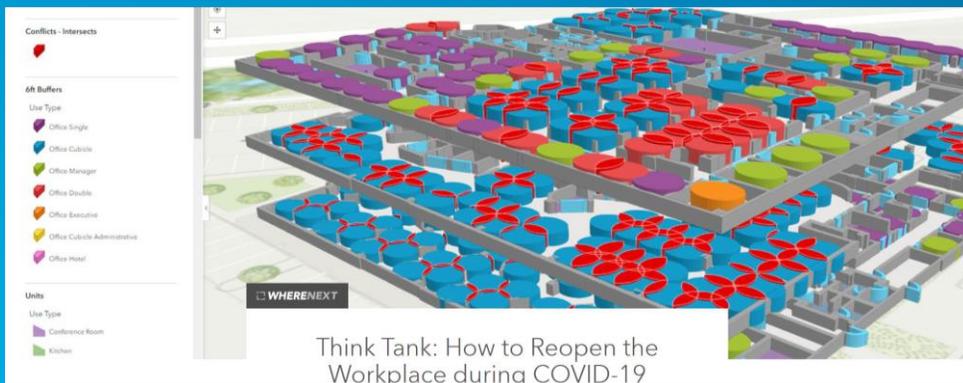
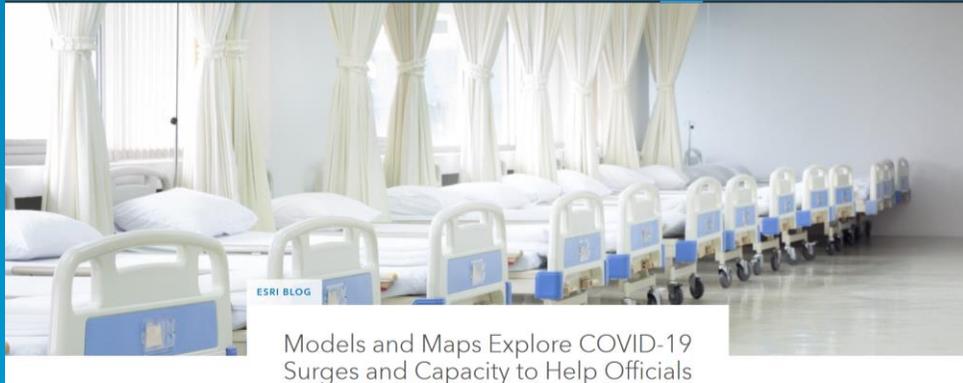


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**COVID-19 Is  
Creating Massive  
Health & Business  
Challenges on a  
Global Scale**

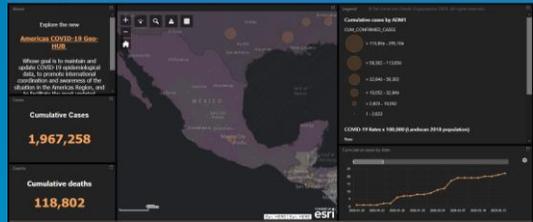
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# Geospatial has a key role to play in Corona Virus response and recovery



# Health, Demographics and Statistics

Aid in understanding and response



PAHO



Johns Hopkins CSSE



SEDAC-CIESEN

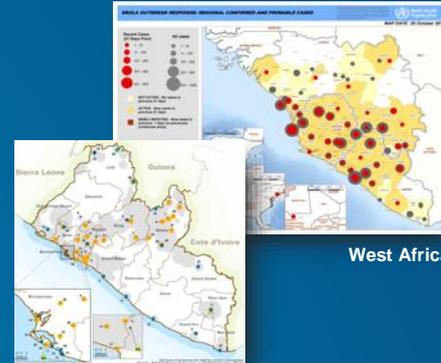


Chile



Brazil

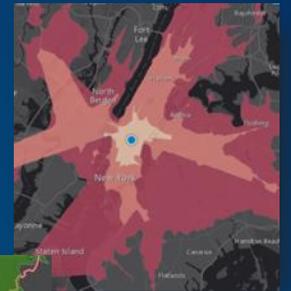
## Ebola Response



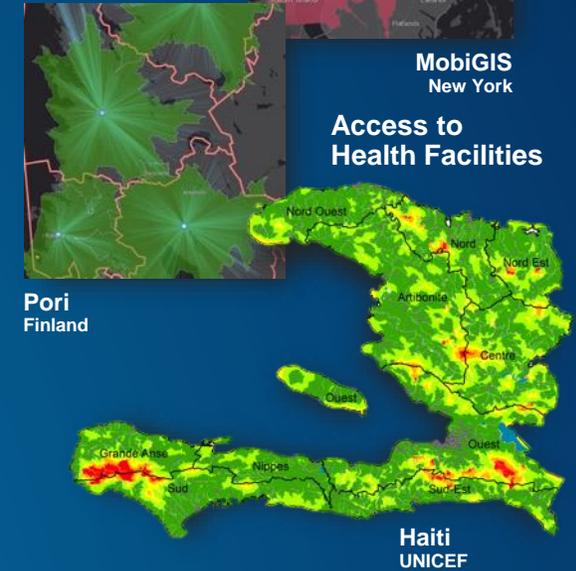
West Africa

Liberia

## Health and Social Services Centers



Access to Care



MobiGIS New York

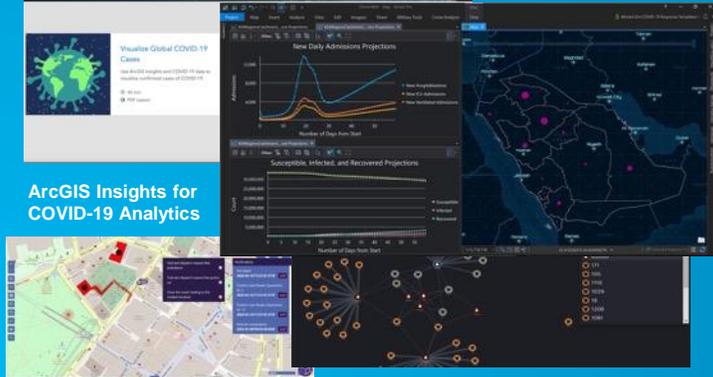
Access to Health Facilities

## Analytics



ArcGIS Insights for COVID-19 Analytics

Chime Analytics for propagation of cases



Contact Tracing

## Vulnerable Populations

FEMA

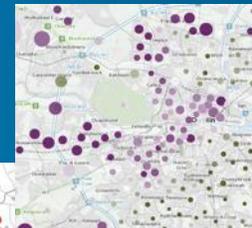


Population Modeling



NASA PopGrid

## Unemployment



Ireland



Santa Clara

## Population Profile



South Carolina

## Homelessness Dashboard



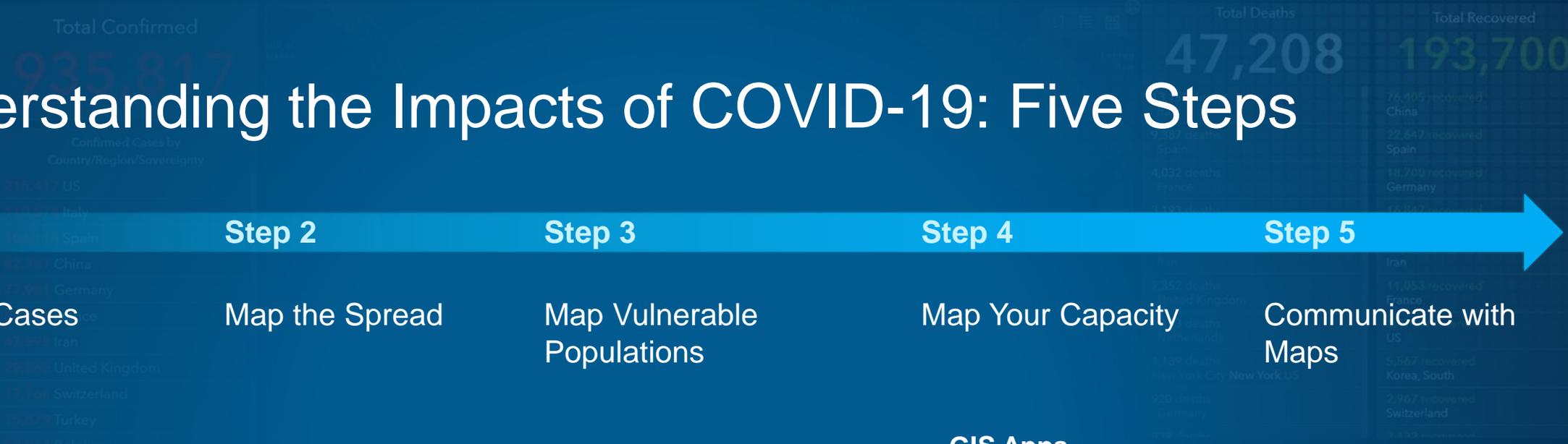
San Bernardino County California

## Homeless Point in Time Count



Orange County California

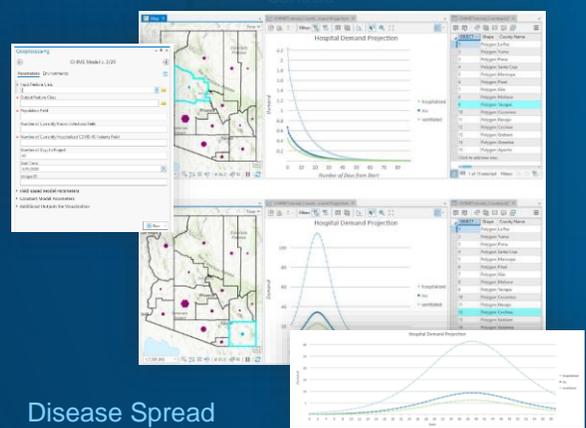
Haiti UNICEF



# Understanding the Impacts of COVID-19: Five Steps

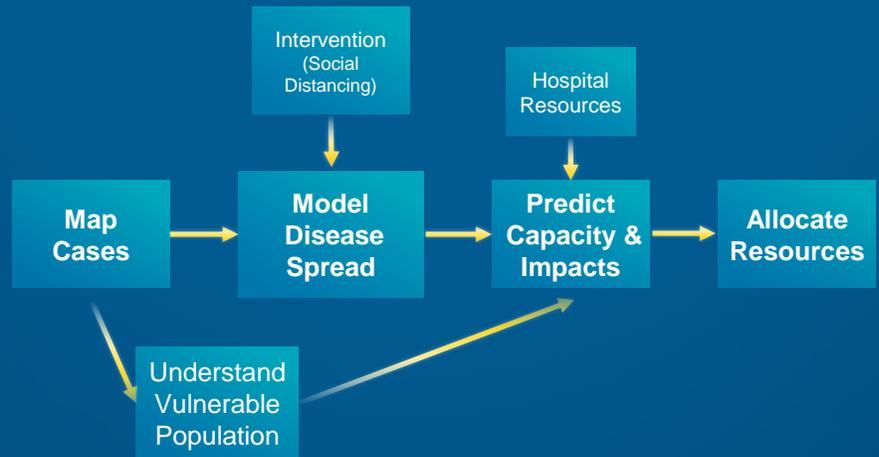


## Modeling & Analysis

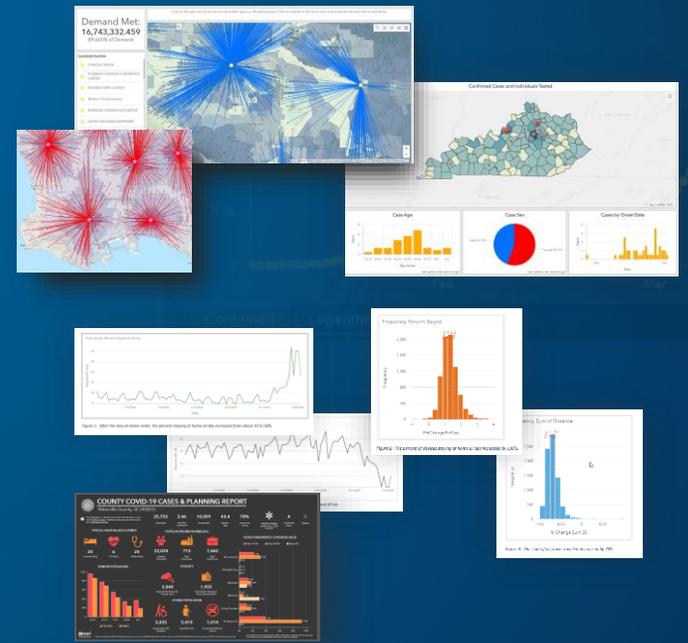


Disease Spread (CHIME Integration)

## Workflows



## GIS Apps



# Modeling & Spatial Analysis

## Pattern Detection



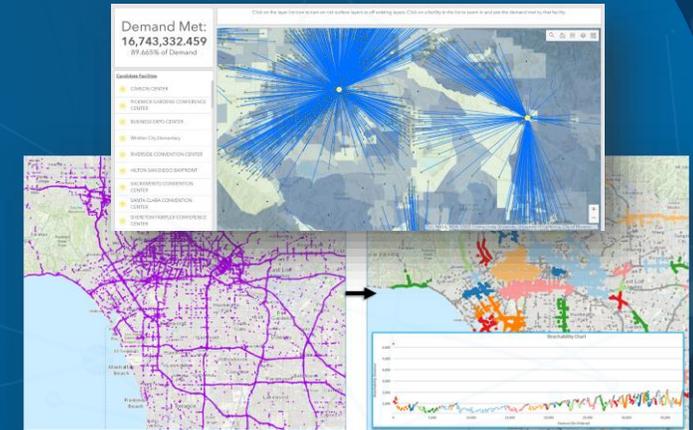
Finding Statistically Significant Clusters & Patterns

## Modeling Prediction



Predicting Geospatial Events/Phenomena

## Site Selection and Resource Allocation



Location/Allocation

*Helping Understand, Predict and Make Decisions . . .  
. . . at Many Scales*

# Coronavirus Business Continuity Solution

Helping Organizations During a Crisis

## Report and Monitor

Status of Your Facilities

Capacity of Your Workforce

Health of Your Employees



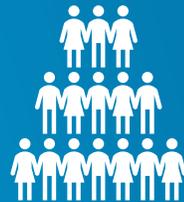
Facility  
Status

## Understand and Act

Current Status of Your  
Workforce and Facilities

Shifting Customer  
Demand

Policy Restrictions



Workforce  
Capacity



Market  
Stability



Supply Network  
Resilience

## Communicate

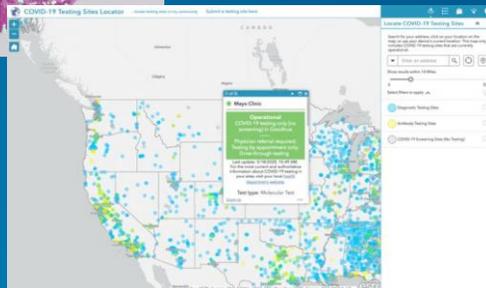
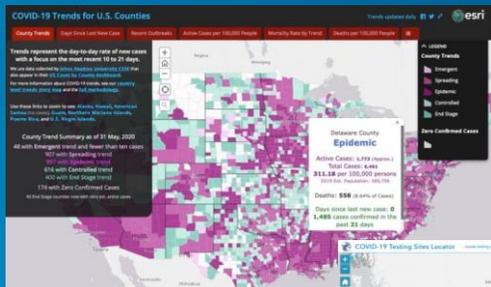
Current Operations  
and/or Disruptions to  
Customers and  
Stakeholders

# Understanding the Impacts of COVID-19 for Re-Opening:

A location-based approach to monitoring reopening and economic indicators

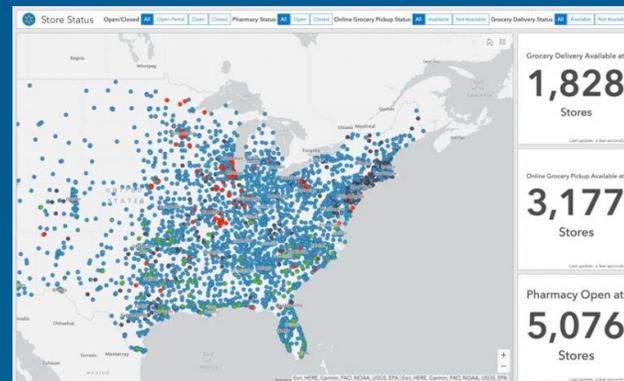
Step 1

Map the Trends



Step 2

Map Community Resilience

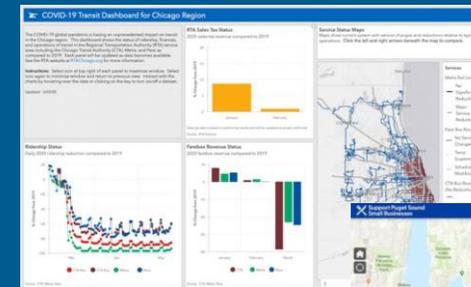


Step 3

Map Organizational Resilience

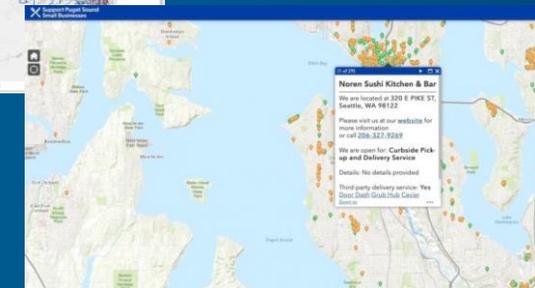
Step 4

Map the Impacts



Step 5

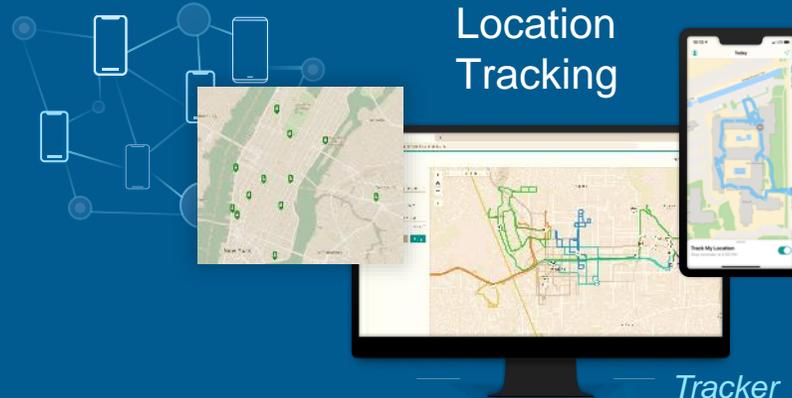
Communicate with Maps



# Field Operations | Location Enabling All Aspects of Field Work

## Capabilities

- Tracking Online
- Offline Workflows
- Preplanned Routes



## Navigation



## Data Capture



## Planning and Management

### Workforce



## Maps & Mark Up

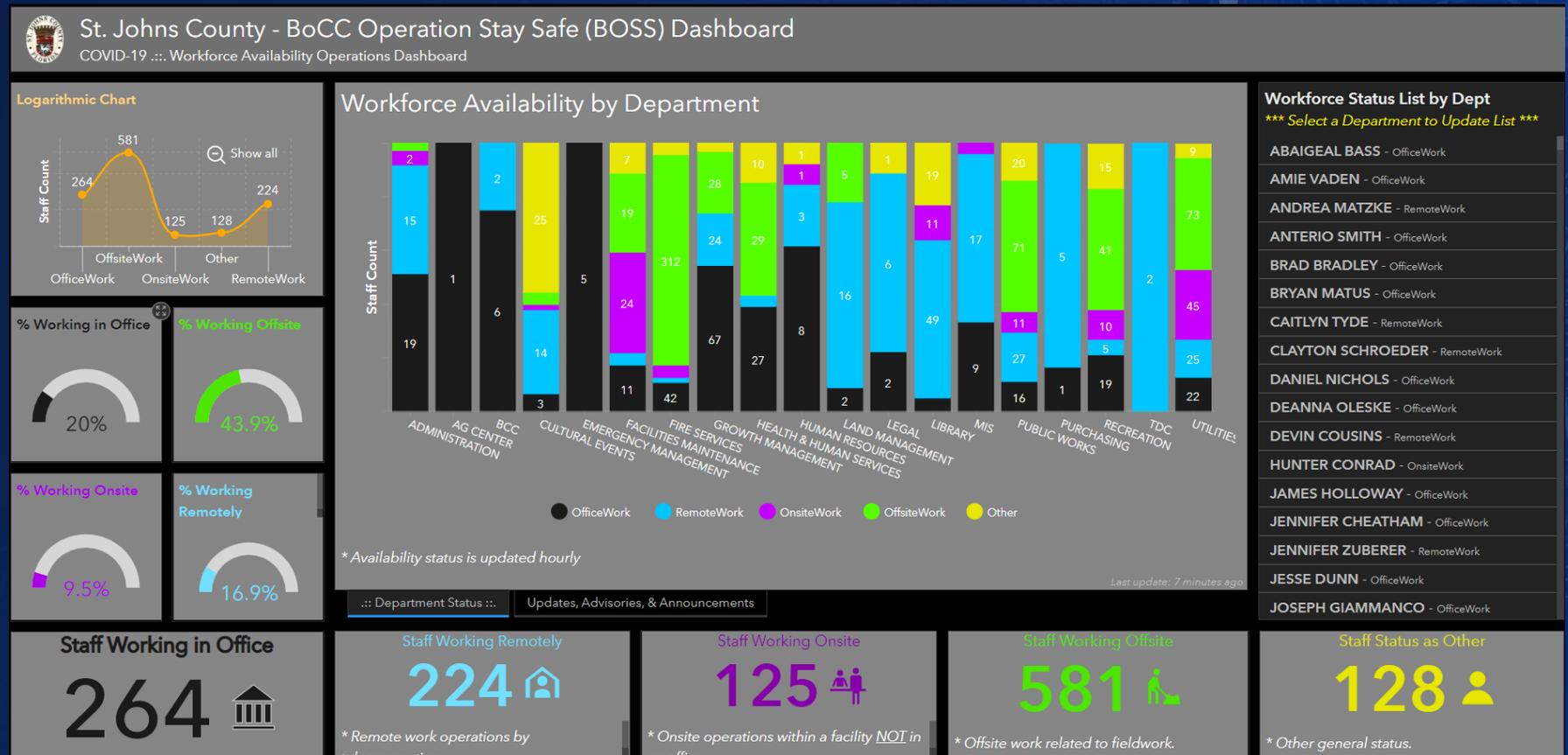


# **Organizations are Now Shifting From COVID-19 Response to Recovery and Reopening**

Brent Jones

Business continuity is an organization's ability to maintain essential functions during and after an interruption, such as a hurricane, earthquake or global pandemic. It's the ability to serve the public, execute mandates, and keep our staff safe.

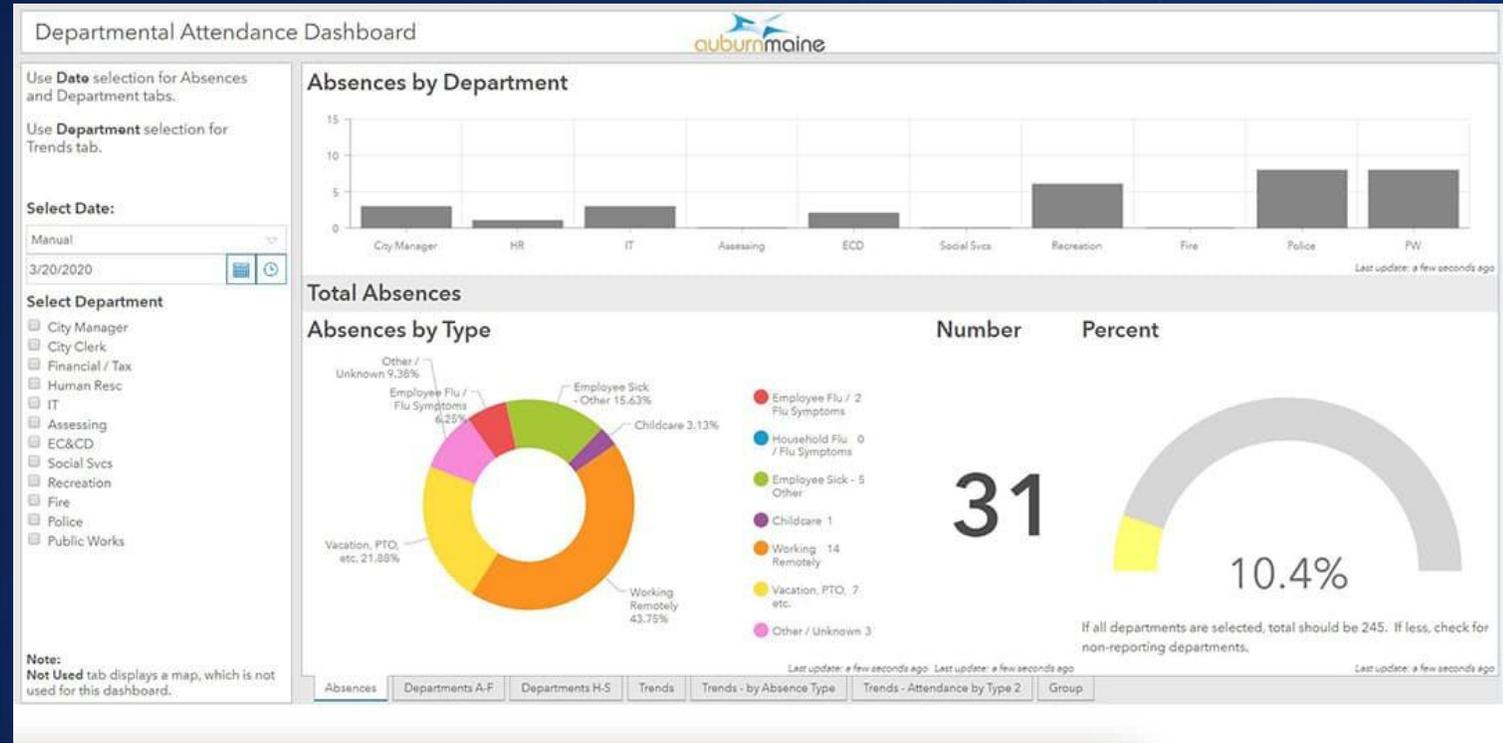
GIS can help.



Do you know *where* your employees are working and if they are safe?

Do you know which employees are in the office, working from home or in the field?

Do you know which employees are in the office, working from home or in the field?



Are you able to communicate the status of employees and facilities with Human Resources and senior leadership?

Are you able to share the status of employees and facilities with other internal decision-makers?

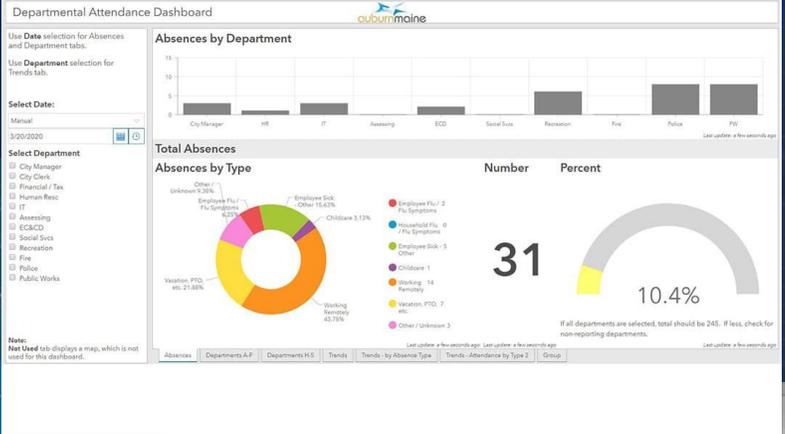
Does the public know which of your offices or stores are still open, and which are impacted or closed?

### Equitable Property Value

Ensuring fair and equitable property appraisal for all property owners

Property taxes are an essential government funding source that is used to finance education, infrastructure, public safety, and other services that benefit the community.

<b>Total Parcels Valued</b> 58,301 <small>Total parcels</small>	<b>Single Family Homes</b> 52,039 <small>Homes, Townhome use parcels</small>	<b>Condominiums</b> 290 <small>Condominium use parcels</small>
<b>Commercial</b> 690 <small>Trade, Office use parcels</small>	<b>Green Space</b> 1,232 <small>Parks, Agricultural, Open Space use parcels</small>	<b>Total Assessed Value</b> \$12,640,076,360.00 <small>US Dollars</small>



#### Individual Check-in

Work Status: Are you working today?  
 Yes  
 No

Where are you working?  
 Normal location (Current Building)  
 Temporary working location  
 Other: Other

Capture your current work location below:

Are you working with anyone today?  
 Yes  
 No

Health Status (Optional):

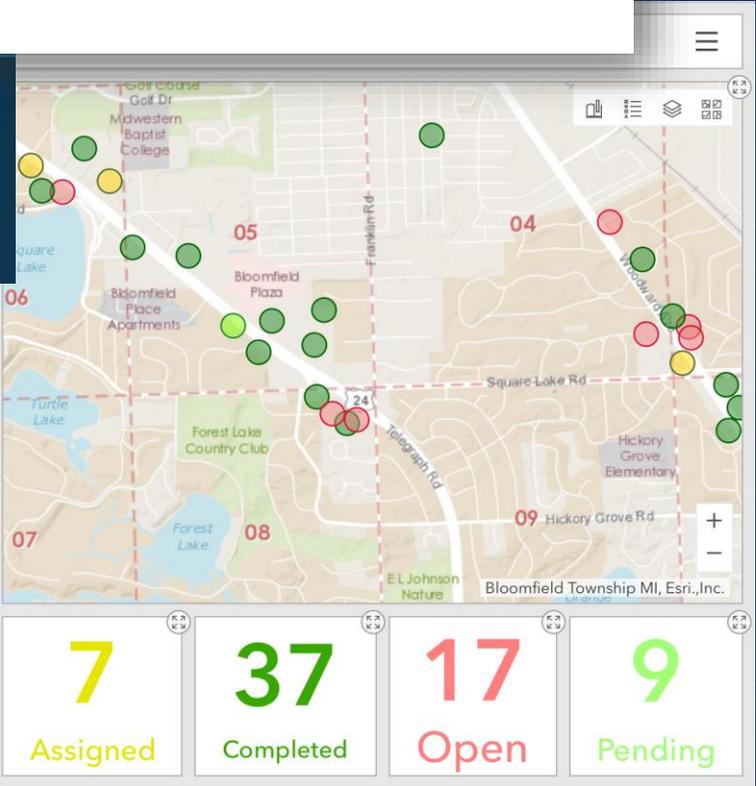
Additional Information:

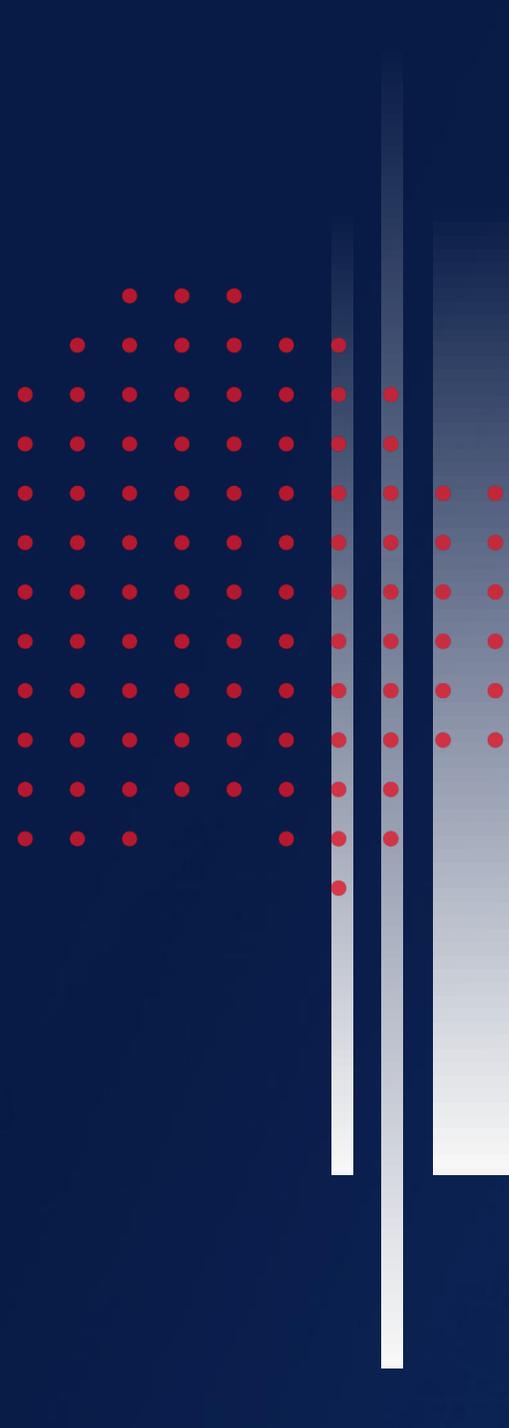
#### Appraisal Status

7 Assigned, 37 Completed, 17 Open, 9 Pending

#### Parcel Editing Jobs

- Boundary Resurvey
- Merge Lots 25 and 26 Echo Park No. 1
- Merge Lots 39 and 40 Bloomfield Heights No. 1
- New Subdivision From CAD file
- Split of Parent Parcel





*Lack of continuity planning can result in a cascade of failures as employers attempt to address challenges of COVID-19 with insufficient resources.*

OSHA Guidance on Preparing  
Workplaces for COVID-19

# Common Technical Challenges

Fast to deploy, web-based cloud solution

## Challenges

- IT Infrastructure
- Lack of Resources
- Data Accuracy
- Timeliness
- Development Time
- Custom Development
- Cost



## Solution

- Cloud-based SaaS
- Template-based
- Single Data Platform
- Real-time Web Services-based
- COTS – Off-the-shelf
- No Software Development
- Very Low Cost

# Coronavirus Business Continuity Solution

## Report and Monitor

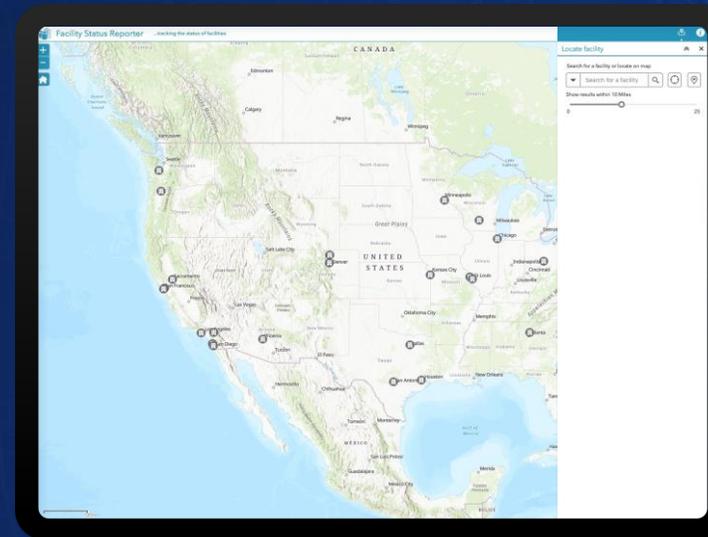
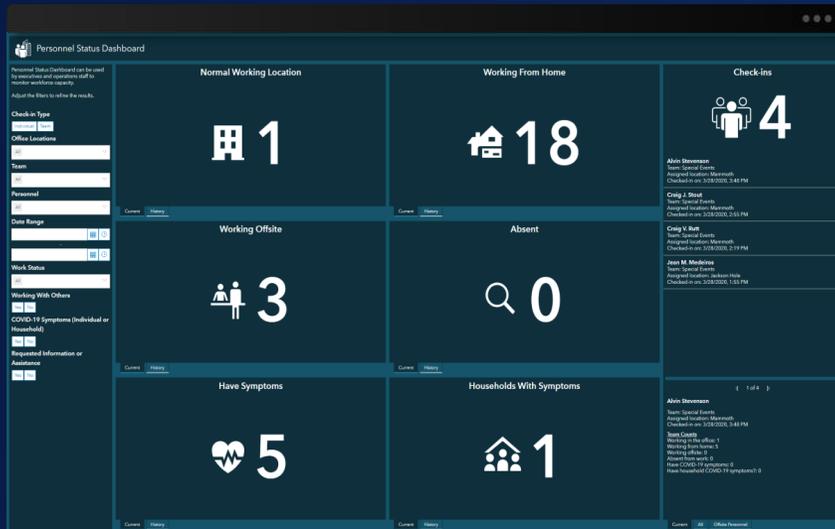
- Status of Your Facilities
- Capacity of Your Workforce
- Health of Your Employees (Optional)

## Understand and Act

- Current Status of Your Workforce and Facilities

## Communicate

- Current Operations and/or Disruptions to Customers and Stakeholders



The Facility Status Report form is used to provide detailed information about a facility's current status. It includes the following sections:

- Name of Facility:** A text input field for the facility name.
- Status:** Radio buttons for Open, Closed, or Inoperable.
- Staffing:** A section for reporting the number of staff working in the office, remotely, and absent.
- Operating with essential staff only?** Radio buttons for Yes or No.

...Supporting commercial organizations, utilities and government agencies

# Apps for Workforce Capacity

## Personnel Status Dashboard



Personnel Status Dashboard

Check-in Type:

Office Locations:

Team:

Personnel:

Date Range:

Work Status:

Working With Others:

COVID-19 Symptoms (Individual or Household):

Requested Information or Assistance:

Normal Working Location	Working From Home	Check-ins
1	18	4
Working Offsite	Absent	
3	0	
Have Symptoms	Households With Symptoms	
5	1	

### Individual Check-in

Work Status

Are you working today?\*

Yes

No

Where are you working?\*

Normal work location (Campus / Building)

Temporarily working from home

Offsite / Other

Capture your current work location below.\*

Lat: 34.05422 Lon: -117.19533

Are you working with anyone today?  
Are you expecting to be in close contact with any individuals?\*

Yes

No

Health Status (Optional)

Additional Information

Submit

Individual Check-in Survey

### Team Check-in

Please provide the number of team members who are:

Working from their normal location (Campus / Building)?\*

Temporarily working from home?\*

Working offsite or another location?\*

Absent from work?\*

Team members who are on vacation or out sick.

Experiencing any COVID-19 symptoms?\*

Fever, cough, or difficulty breathing.

In the same household with someone experiencing any COVID-19 symptoms?\*

Fever, cough, or difficulty breathing.

Can our organization provide any additional information or assistance?

Submit

Team Check-in Survey

### Health Status (Optional)

Our goal is to provide a safe workplace for employees and do our part to slow the spread of COVID-19. The health status questions are optional. If you choose to share any symptoms you, and members of your household, are experiencing, this may help us reduce transmission among staff, maintain a healthy business operation, and provide additional assistance you may need or request.

Are you currently experiencing any COVID-19 symptoms?  
Select all that apply.

Fever

Cough

Difficulty Breathing

Are any members of your household experiencing any COVID-19 symptoms?

Yes

No

Additional Information

Can our organization provide any additional information or assistance?

Submit

Health Status Check-in (optional)

Appraisal Status

Workloads

Parcel Editing Jobs

- Boundary Resurvey
- Merge Lots 25 and 26 Echo Park No. 1
- Merge Lots 39 and 40 Bloomfield Heights No. 1
- New Subdivision From CAD file
- Split of Parent Parcel

7	37	17	9
Assigned	Completed	Open	Pending

# Apps for Facility Status



**Facility Status Report**

Name of Facility  
Est Denver

Status\*

Open  Closed  Impacted

Staffing

Number of staff working in the office\*

Number of staff working remotely\*

Number of staff absent\*

Operating with essential staff only?

Yes  No

Are staff required to stay overnight?

Yes  No

Facility and Security

Entrance staffed?

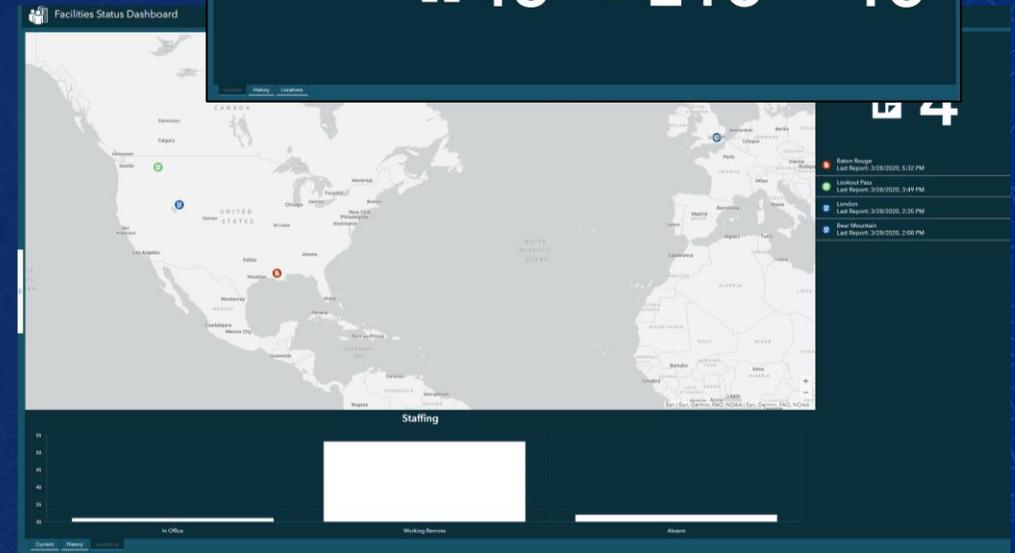
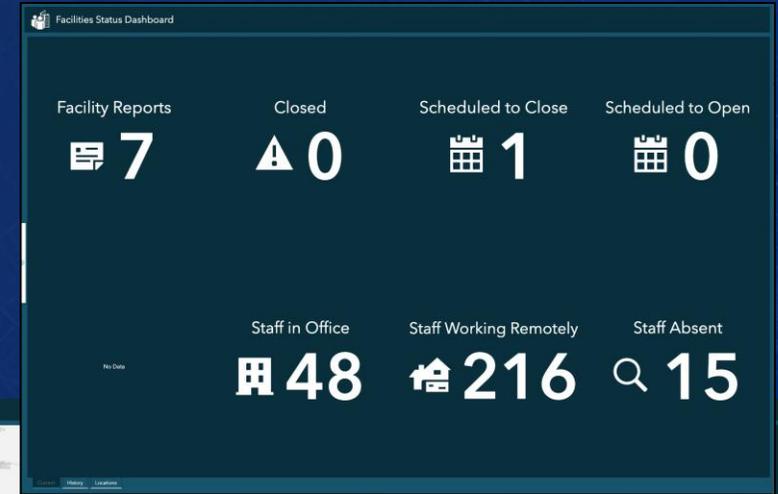
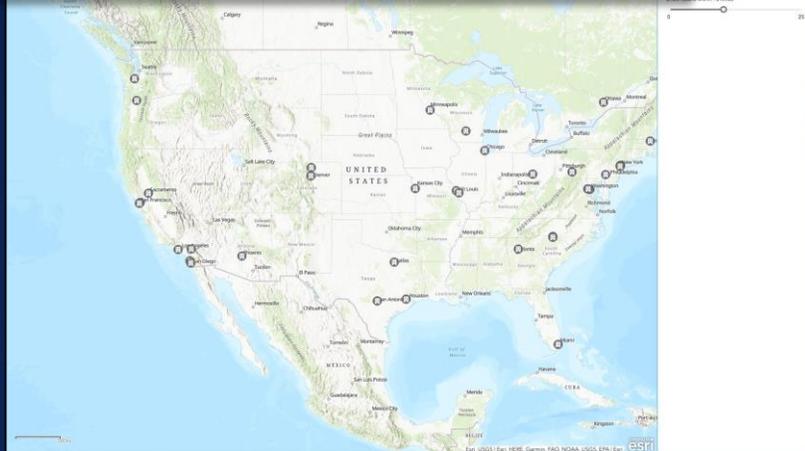
Yes  No

Building secured?

Yes  No

Access restricted?

Yes  No



Facility Status Report

Facility Status Reporter

Facilities Status Dashboard

# Apps for Economic Development and Businesses

**Small Business Listing**

Complete the Small Business Listing form to enroll in the Small Business Program and to be featured in the Small Business Listing Locator.

**Health Compliance**

I have read, understood, and complied with all capacity, social distancing, and sanitation business health orders. Provide business details and optionally hours of operation and employment opportunities.\*

Yes

**Details**

**Contact Name\***  
John Doe

**Phone\***  
555-555-5555

**Email Address\***  
email@mail.com

**Business Name\***  
Doe Brewery

**Business Phone**  
777-777-7777

**Business Email Address**  
business@mail.com

Small Business Listing

**Small Business Impact Survey**

All data reported will be general and not contain individual business details or information.

**Details**

**Survey Date/Time\***  
5/19/2020 04:25 PM

**Business Name\***  
Jane's Pasties

**Contact Name\***  
Jane Doe

**Phone\***  
555-555-5555

**Email\***  
jane@janespasties.com

**Address\***  
Ex: 101 S Main Avenue

**Small Business Listing Manager**

**Restaurant / Bar**  
Open for Business

101 Walnut, Naperville  
777-777-7777  
jane@janespasties.com  
Website

**Hours of Operation**  
8:00am - 7:00pm Monday through Friday

**Services Offered**  
Curbside, Delivery, Drive-Thru, Takeout

**Ordering Options**  
Drive Up, Mobile App, Phone, Website

**Agency Comments**  
Located in enterprise zone

Small Business Listing Manager



**Small Business Program Manager**

Visible to Public	Business Name	Business Type	Business Type Other	Status	Employment
Yes	Jane's Pasties	Restaurant / Bar		Open for Business	No
Yes	Doe Brewery	Restaurant / Bar		Open for Business	Yes
Yes	Test Dagle 2	Retail		Open for Business	Yes
Yes	Test Dagle 1	Financial		Temporarily Closed	
Yes	City Lab	Medical / Pharmacy		Open for Business	

**Jane's Pasties**  
Restaurant / Bar  
Open for Business

101 Walnut, Naperville  
777-777-7777  
jane@janespasties.com  
Website

**Hours of Operation**  
8:00am - 7:00pm Monday through Friday

**Services Offered**  
Curbside, Delivery, Drive-Thru, Takeout

**Ordering Options**  
Drive Up, Mobile App, Phone, Website

**Contact:** Jane Doe  
**Contact Phone:** 555-555-5555  
**Internal Comments**  
Located in enterprise zone

Send Business Impact Survey

Small Business Program Manager

**Small Business Impact Dashboard**

**Operating Status**

Business Impact Surveys: 6

**Details**

Business Name: Gates Manufacturing  
Contact Name: Michael Gates  
Contact Phone: 630-555-7777  
Address: 167 S Taylor Ave, Naperville, IL  
Type: Manufacturing  
Designations: Minority Owned: No, Woman Owned: No, Veteran Owned: No

**Business Type**

Restaurant / Bar 17%, Retail 17%, Other 17%, Automotive 17%

**How much of a slow down can your business survive?**

**Largest Concern**

**Annual Revenue**

Overview | Survey Responses

Small Business Impact Dashboard

# Apps for Residents

3D Maps



**Small Business Listing**

Complete the Small Business Listing form to enroll in the Small Business Resource Program and be featured in the Small Business Listing Locator.

**Health Compliance**

I have read, understood, and complied with all applicable local, state, and federal health codes. I hereby grant permission to the City of Naperville to use my business name and contact information for promotional purposes.

**Contact Name\***

John Doe

**Phone\***

555-555-5555

**Email Address\***

john.doe@naperville.il.gov

**Business Name\***

John's Business

**Business Phone**

555-555-5555

**Business Email Address**

john.doe@naperville.il.gov

**Small Business Locator** ...locate small businesses in my community

**Find Small Businesses**

Search for an address or locate on map

Find address or place

Show results within 1 Miles

0 15

Select filters to apply

**Small Businesses**

Information Directions

**Restaurant / Bar Open for Business**

105 E Washington St, Naperville, IL  
555-855-9878  
fox@foxbrewery.com  
Website

**Hours of Operation**  
8:00am - 5:00pm Monday through Friday

**Services Offered**  
Curbside, Delivery, DineIn, Takeout, Growler Fills

**Ordering Options**  
Phone, Walk-In, Website, Twitter

**Additional Notes**  
2 for 1 pint night Monday, Wednesday and Friday

**Employment Opportunities**  
Position(s): Looking for 3 servers and 2

Small Business Locator

**Health Violation Reporter**

**Your Name\***

John Doe

**Phone\***

555-555-5555

**Email\***

john.doe@email.com

**Occurred On\***

5/19/2020 04:43 PM

**Business Name\***

Jane's Pasties

**Location\***

101 S Washington Napen

Health Violation Reporter

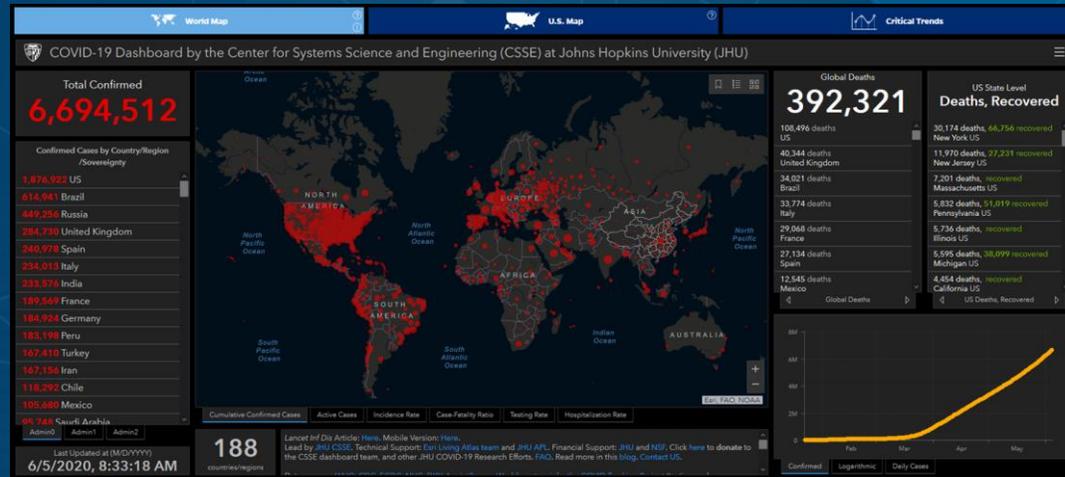
Small Business Locator App

# From Response to Recovery and Re-Opening

## Response

## Recovery

## Re-Opening



### Business Continuity

Understand the operational capacity of your workforce; monitor the status of your facilities; and communicate disruptions to customers and stakeholders.



### Small Business Recovery

Engage local business owners; measure impact of pandemic on small business; manage health order violations; and promote small business recovery.

...Supporting commercial organizations, utilities and government agencies

SLOW ECONOMIC GROWTH

UNEMPLOYMENT

EXTERNAL DEBT

WATER OVER-CONSUMPTION



SOCIAL CONFLICTS

CRIME GROWTH

DEMOGRAPHIC SHIFTS

UNPLANNED URBAN GROWTH



DISASTERS

CLIMATE CHANGE

FLOODING

FOOD SCARCITY



# Every Nation wants to be...

Prosperous

Safe

Resilient

Healthy

Transparent

Sustainable

Livable

Collaborative

Innovative

# COVID-19 Support

Request Assistance and Explore Resources:

[www.esri.com/disaster](http://www.esri.com/disaster)

Request Assistance via Email:

[disaster\\_help@esri.com](mailto:disaster_help@esri.com)

Solutions to help you re-open

<https://solutions.arcgis.com/>

## ArcGIS Solutions for Coronavirus (COVID-19)

Helping organizations maximize their ArcGIS investment in this time of need



### Business Continuity

Understand the operational capacity of your workforce; monitor the status of your facilities; and communicate disruptions to customers and stakeholders.



### Testing Sites

Identify at-risk populations; locate optimal testing sites; manage testing site status; and share testing site information with the public.



### Recovery Metrics

Tabulate symptoms, cases, and hospital capacity metrics; monitor key recovery trends and performance targets; and communicate progress made to interested stakeholders.

esri Products Solutions Support & Services News About

Disaster Response Program Overview Disasters Resources Request Assistance

## Disaster Response Program

When disaster strikes, we're here to support you 24/7

Coronavirus Response Resources

To help public health agencies and other organizations jump-start their response to COVID-19, Esri is providing the ArcGIS Hub Coronavirus Response template at no cost through a complimentary six-month subscription of ArcGIS Online with ArcGIS Hub Basic. ArcGIS Hub is a framework to build your own website to visualize and analyze the COVID-19 crisis in the context of your organization's or community's resiliency and assets.



## How ArcGIS aids response

- Inventory and map resources
- Model the surge
- Manage testing sites
- Monitor community indicators
- Communicate and inform



### Inventory and map key resources

Monitor the current inventory of personal protective equipment (PPE) and the capacity and status of facilities. Map the location of these resources and their readiness to deliver critical services.

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## Business continuity and recovery workflows

- Workforce capacity
- Facility status
- Business recovery
- Supply network resilience
- Communications hub



### Workforce capacity

Identifying and maintaining awareness about employee capacity and well-being is an essential component of business resilience. By leveraging mobile surveys for daily checks and dashboards to monitor responses, organizations can implement new business to realign and prioritize their workforce assignments with business operators.

[More about workforce capacity](#)

## Five spatial approaches for reopening

- 1 Map the trends
- 2 Map community resilience
- 3 Map organizational resilience
- 4 Map the impacts
- 5 Communicate with maps



### Map the trends

With up-to-date time-enabled maps, monitor the overall cases-per-day trend and the most recent two-week case trends to determine a community's readiness to re-open.

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**Questions?**



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