



The Most Watched Website in the World

The Evolution of the JHU Global Coronavirus Dashboard

Introductions and Team

Reina Murray

Geospatial Data Curator &
Applications Administrator

Mara Blake

Manager of Data Services

Center for Systems & Science Engineering

Dr. Lauren Gardner
Ensheng Frank Dong
Hongru Du

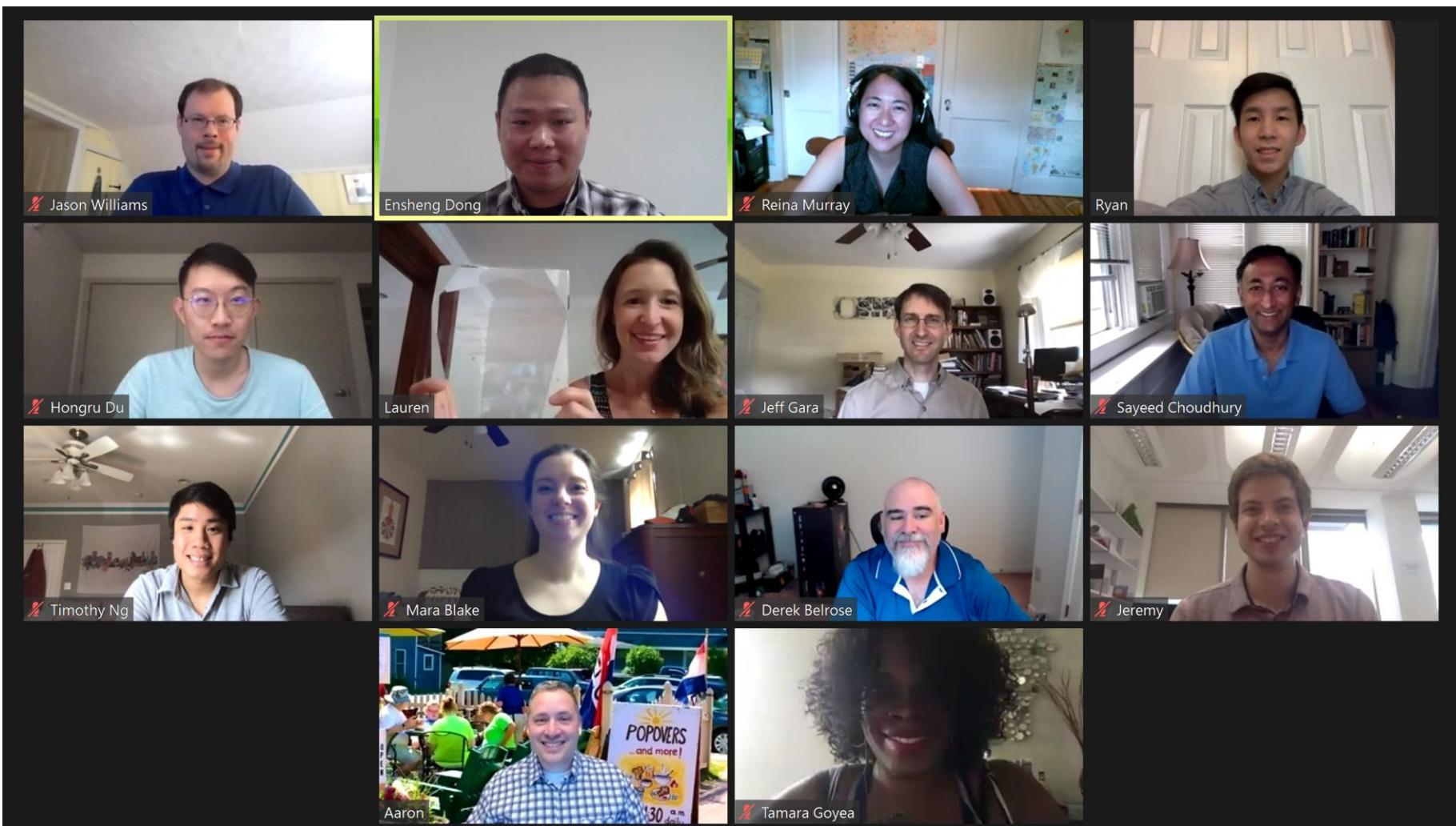
Sheridan Libraries

Sayeed Choudhury
Jason Williams
Jeffrey Gara
Derek Belrose

Applied Physics Laboratory

Aaron Katz
Tamara Goyea
Ryan Lau
Timothy Ng
Jeremy Ratcliff

- ## Introductions and Team



Agenda

- 1. How We Got Here:** the Story and Evolution of the JHU Global COVID-19 Dashboard
- 2. The Balancing Act:** Managing GIS Needs and Services for a Campus in Transition and Beyond
- 3. Looking Ahead:** Trends in Higher Education



How We Got Here

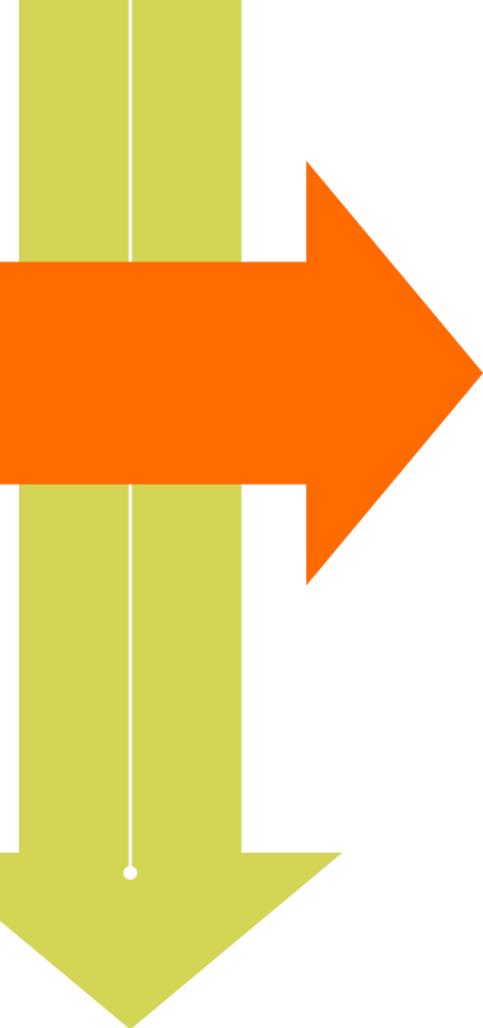


Dr. Lauren Gardner, associate professor of civil and systems engineering at Johns Hopkins University



Ensheng Frank Dong, first-year Ph.D. student in civil and systems engineering at Johns Hopkins University

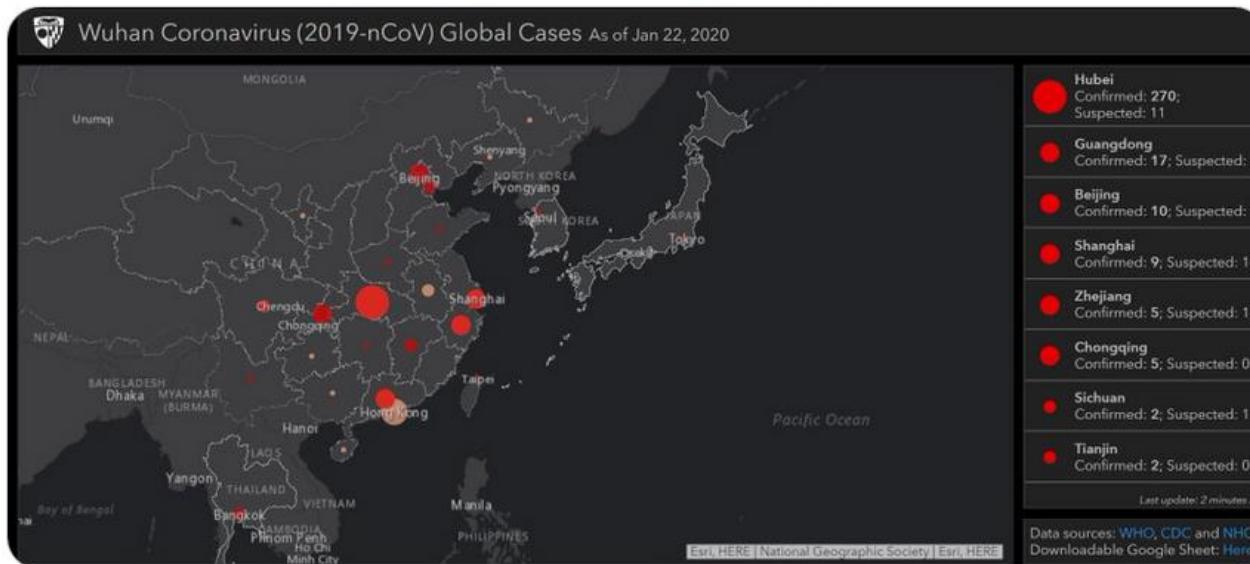




Lauren Gardner 
@TexasDownUnder

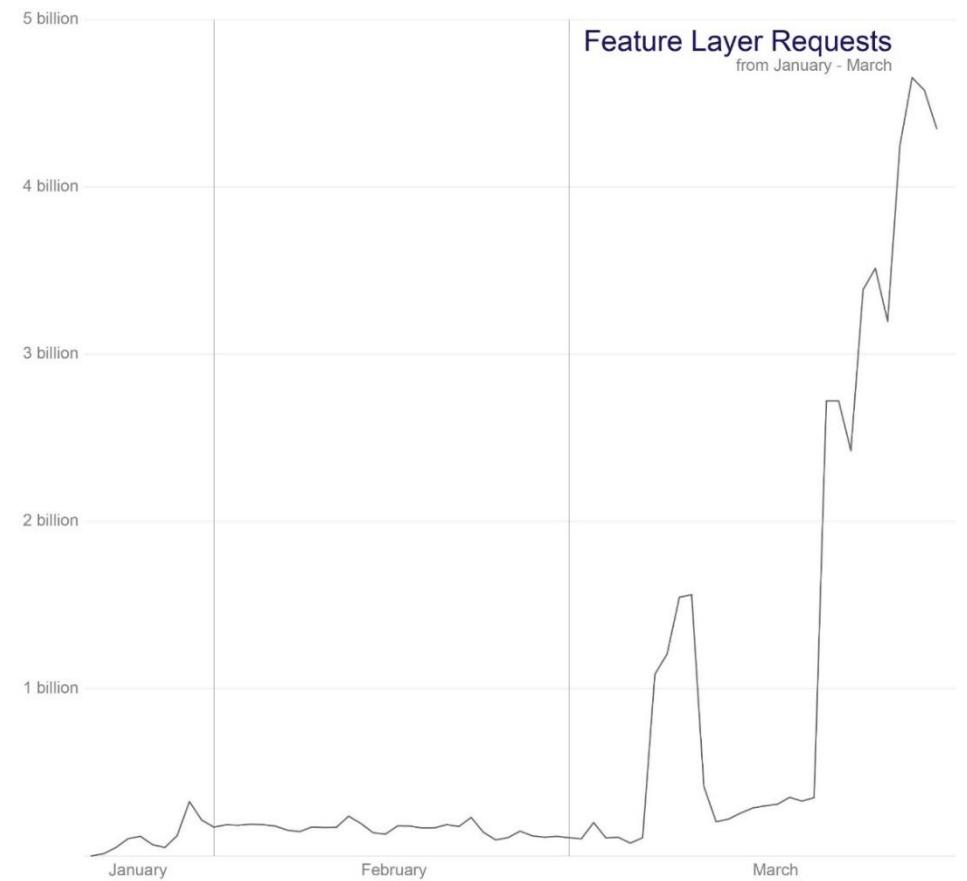
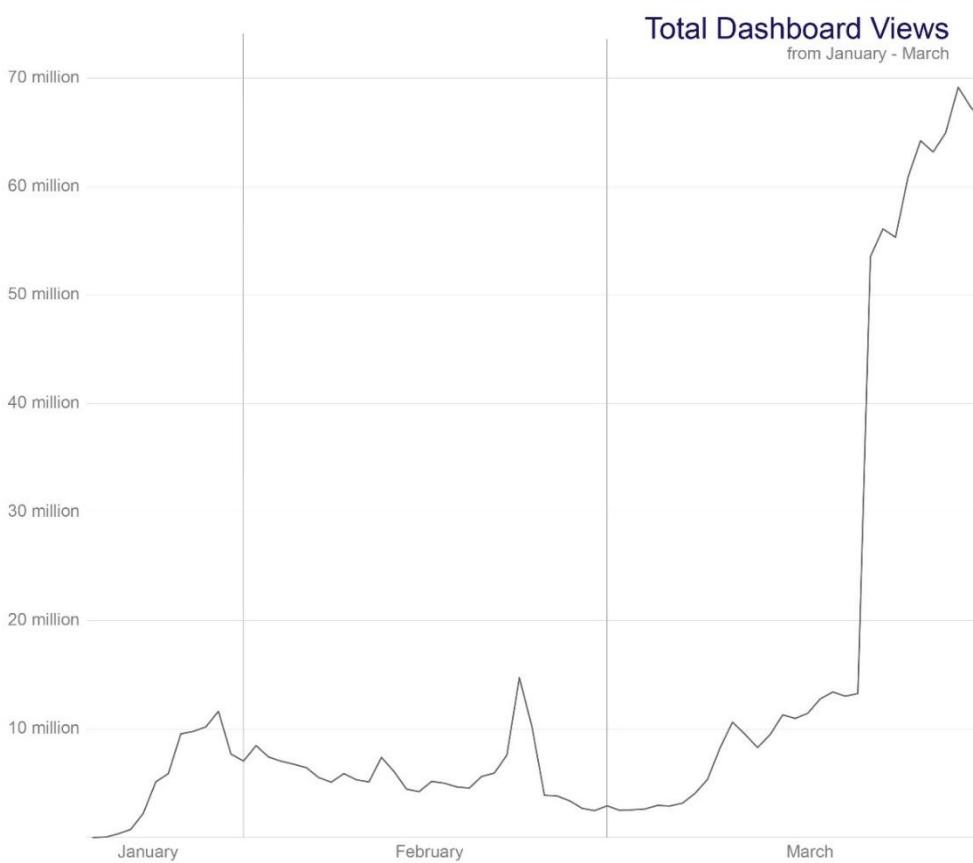
▼

We are tracking the 2019-nCoV spread in real-time. Cases and locations can be viewed here; data available for download. [#nCoV2019 @JHUSystems](#)
[gisanddata.maps.arcgis.com/apps/opsdashbo...](http://gisanddata.maps.arcgis.com/apps/opsdashboard)

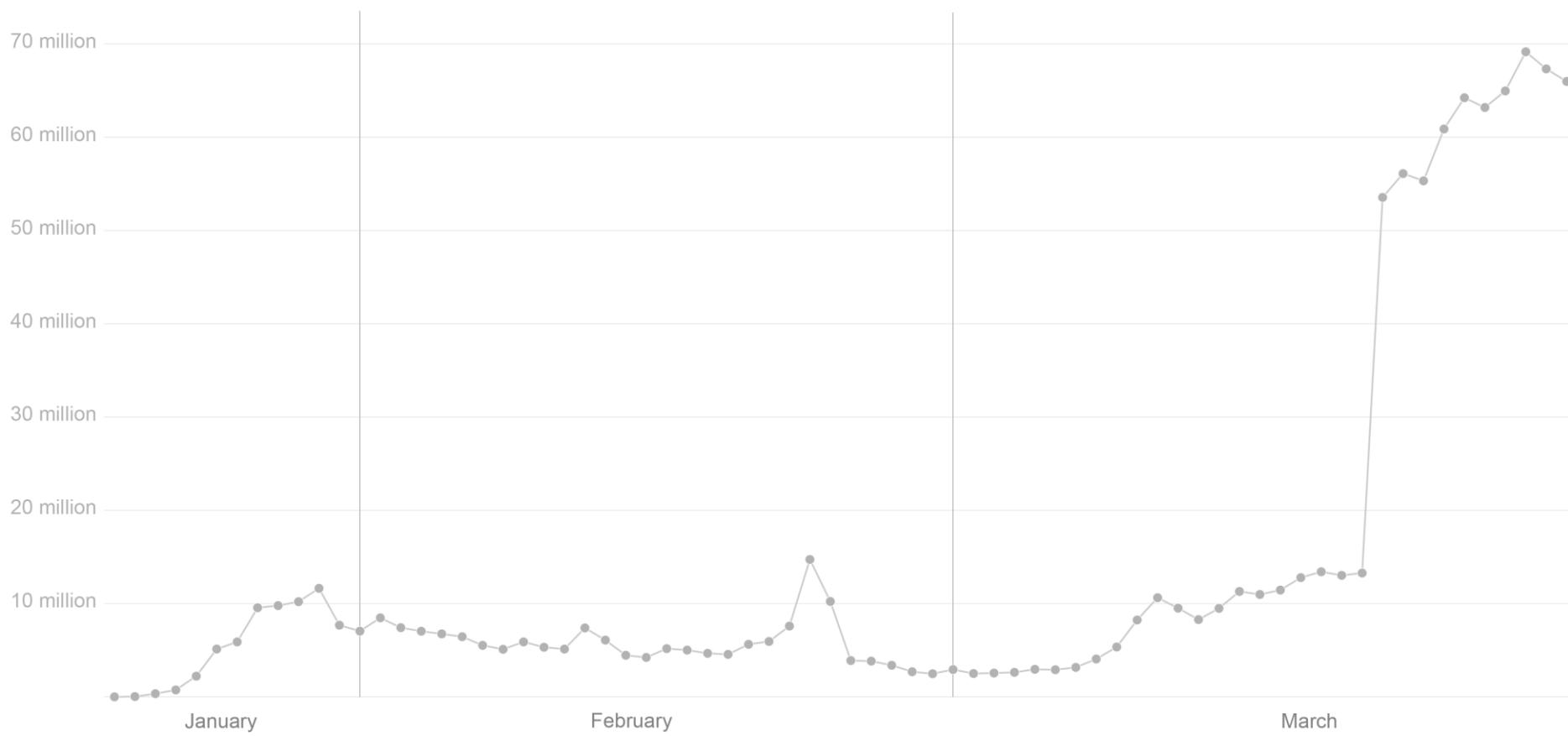


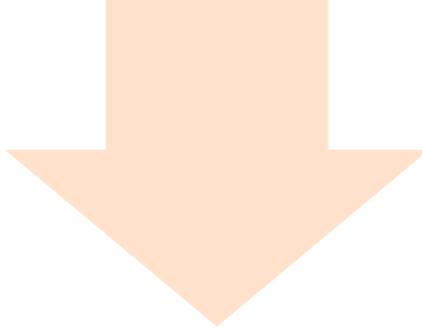
11:04 AM · Jan 22, 2020 · [Twitter Web App](#)

The First Three Months



Dashboard Views

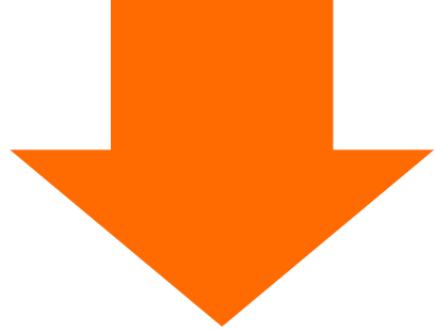




An Evolving Team

As the demands for the dashboard and the scope for the project grew, so too did the teams to manage and support it.





Technical Support

Project Support





Technical Support

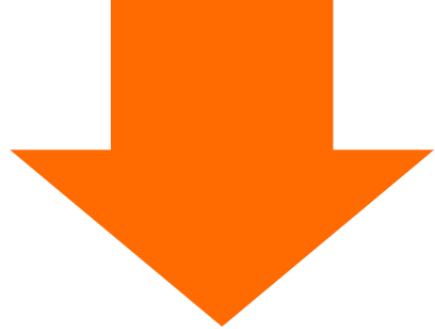


JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

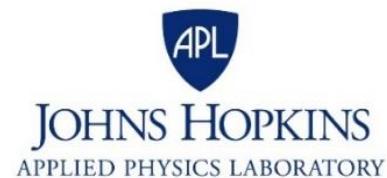
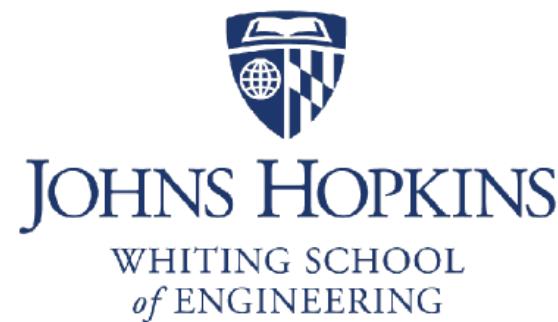
**Center for Systems Science
and Engineering**

Project Support





Technical Support

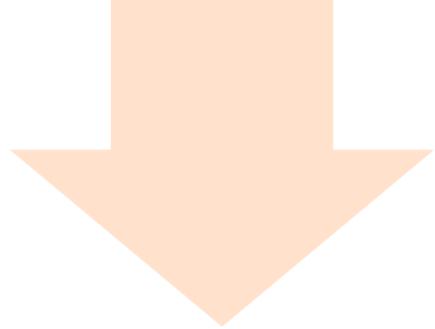


**Center for Systems Science
and Engineering**

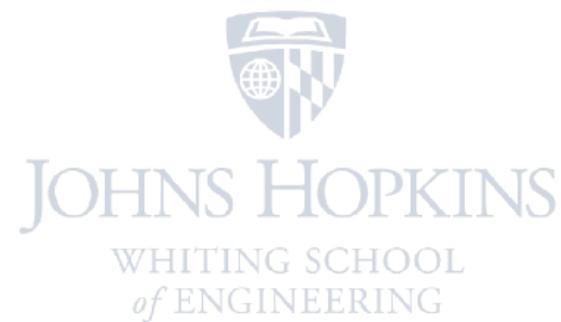


Project Support





Technical Support

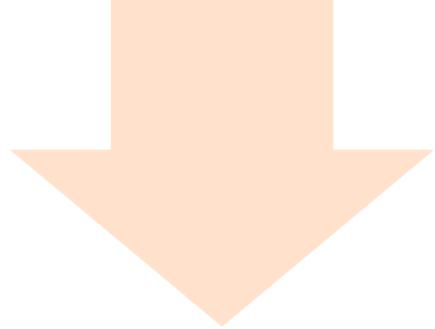


Center for Systems Science
and Engineering



Project Support

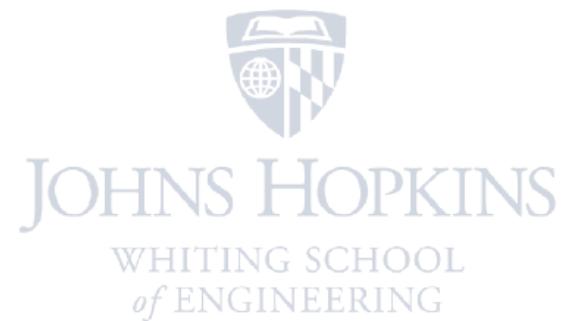




Technical Support



THE SCIENCE OF WHERE™



Center for Systems Science
and Engineering

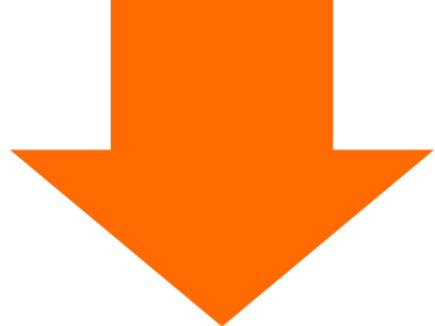


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UNIVERSITY

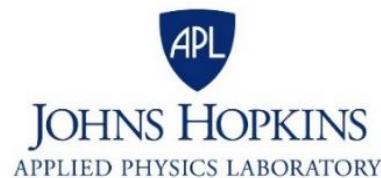
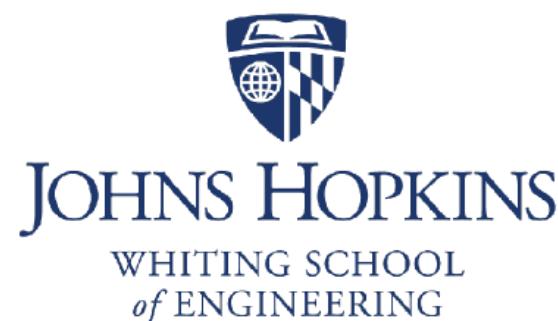


Project Support





Technical Support



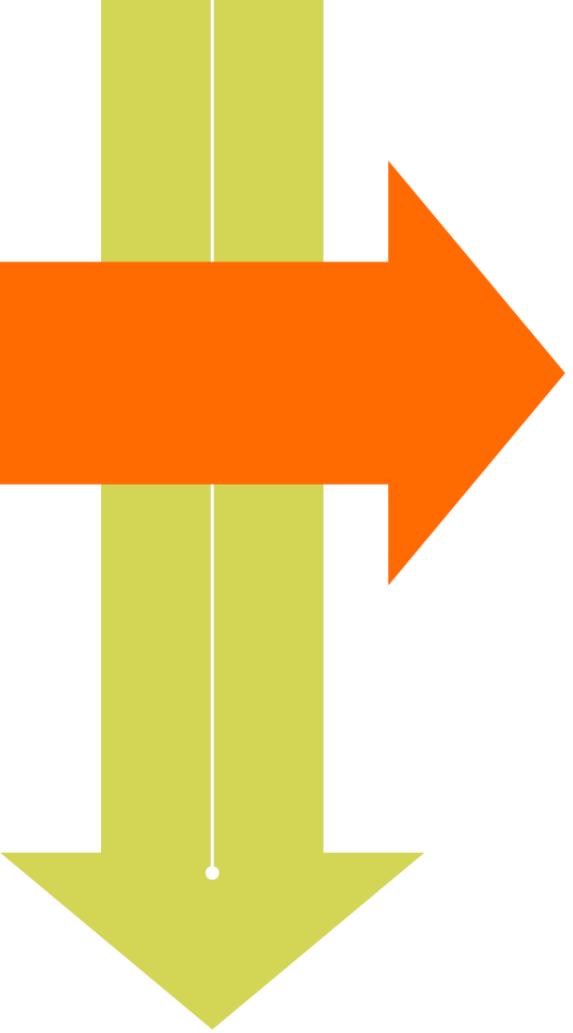
Center for Systems Science
and Engineering



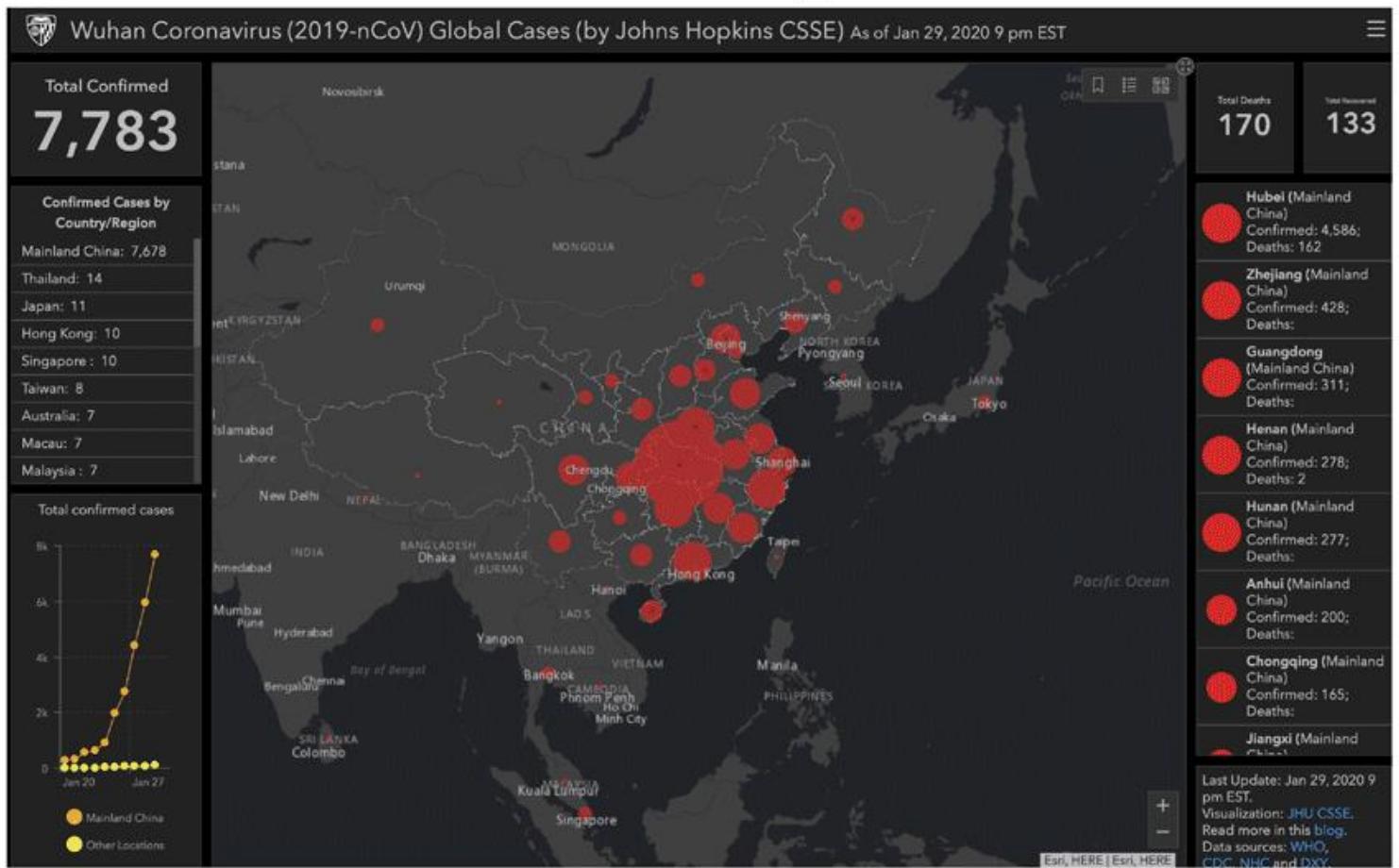
Project Support



(and more!)



January



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LIBRARIES

LIBRARIES

Data Services



COVID-19 Cases US

The current situation for the COVID-19 virus in the US updated hourly.

Feature Layer by [CSSE_GISandData](#)

Created: Mar 21, 2020 Updated: Jul 28, 2020 View Count: 152,452,318

[Living Atlas](#)

Description

This feature layer contains the most up-to-date COVID-19 cases for the US, Canada. Data sources: WHO, CDC, ECDC, NHC, DXY, 1point3acres, Worldometers.info, BNO, state and national government health departments, and local media reports. The China data is automatically updating at least once per hour, and non China data is updating manually. This layer is created and maintained by [the Center for Systems Science and Engineering \(CSSE\)](#) at the Johns Hopkins University. This feature layer is supported by Esri Living Atlas team and JHU Data Services. This layer is opened to the public and free to share. [Contact Johns Hopkins](#).

IMPORTANT NOTICE:

1. Fields for Active Cases and Recovered Cases are set to 0 in all locations. John Hopkins has not found a reliable source for this information at the county level but will continue to look and carry the fields.

2. Fields for Incident Rate and People Tested are placeholders for when this becomes available at the county level.

Overview **Data** **Visualization**

[Open in Map Viewer](#) [Open in Scene Viewer](#) [Open in ArcGIS Desktop](#)

Details

Source: [Feature Service](#)
Data Last Updated: Jul 28, 2020, 1:46:44 AM
Size: 0 KB

[f](#) [t](#) [g](#)

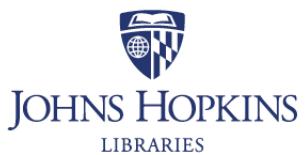
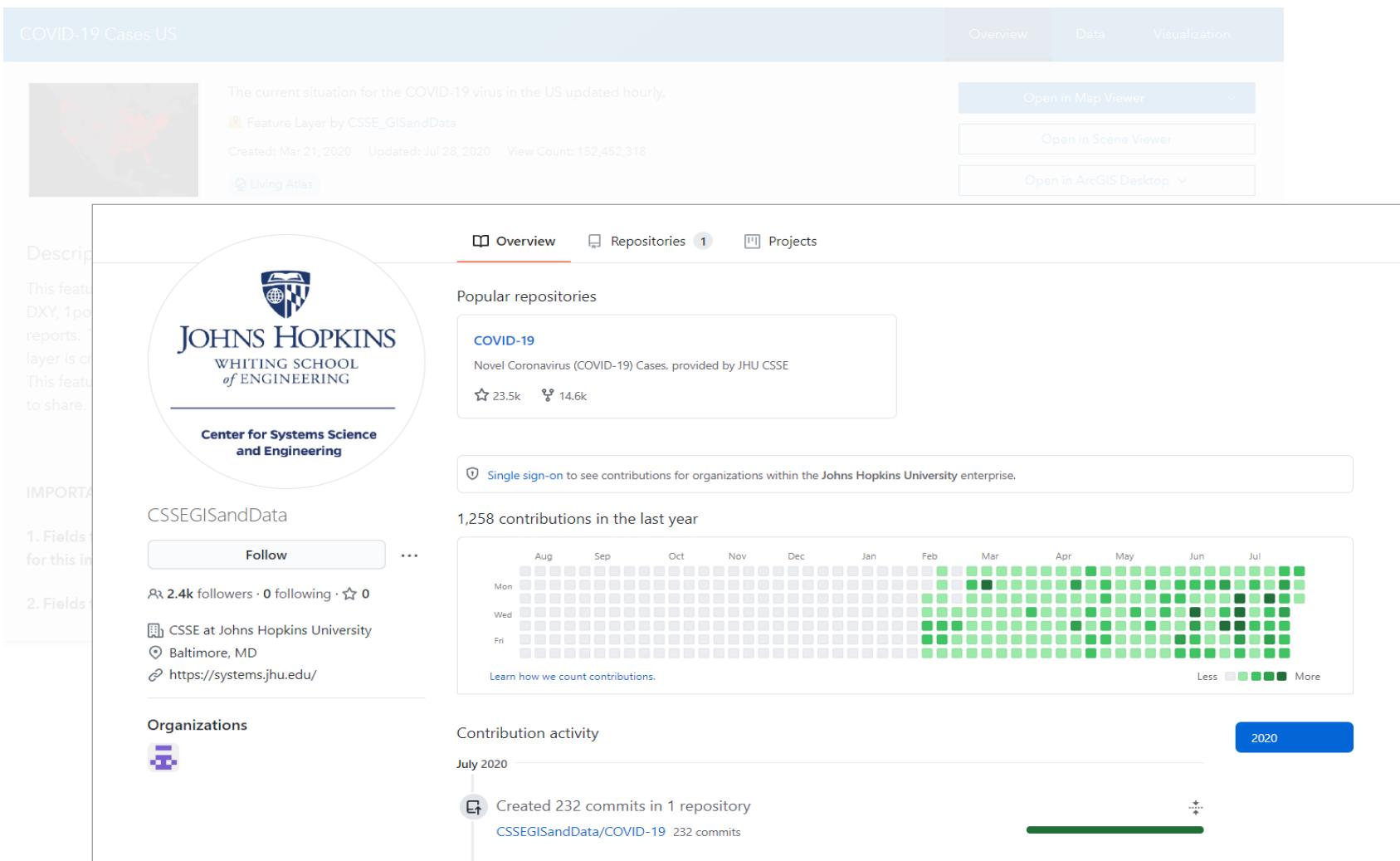
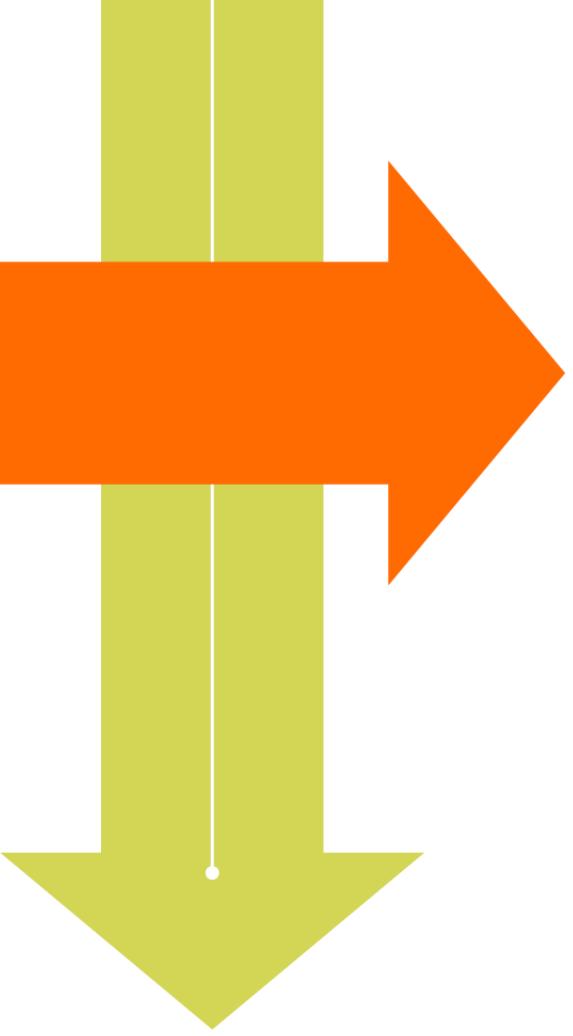
Share

[Share](#)

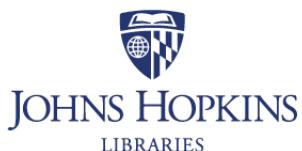
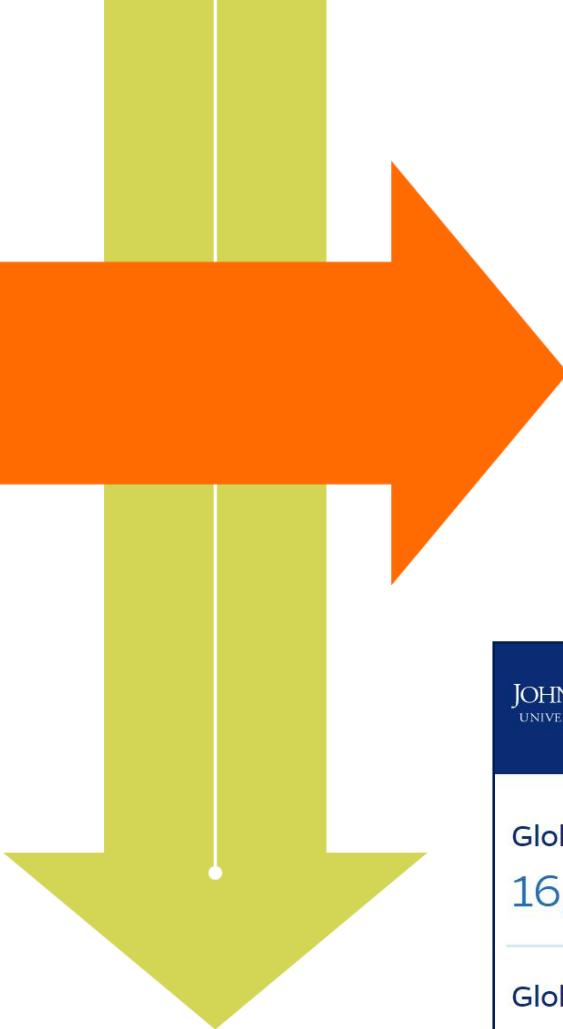
Owner

CSSE_GISandData

Categories



Data Services



LIBRARIES

Data Services

The dashboard features a dark blue header with the Johns Hopkins University & Medicine logo, the Coronavirus Resource Center, and navigation links for Home, Tracking, Testing, Tracing, By Region, News & Resources, and About. Below the header, the Global Confirmed cases (16,482,592) and Global Deaths (654,103) are displayed. The main content area includes a chart of daily new cases per 100k people for US states from January 22 to July 22, 2020. A search bar for 'Country or state...' is available. A 'TESTING TRENDS TOOL' section allows tracking trends in COVID-19 cases and tests. A 'STATE TIMELINE' section shows the impact of opening and closing decisions by state.

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UNIVERSITY & MEDICINE | CORONAVIRUS
RESOURCE CENTER

Home Tracking Testing Tracing By Region News & Resources About

Global Confirmed
16,482,592

Global Deaths
654,103

U.S. Confirmed
4,290,263

U.S. Deaths
148,011

Daily New Cases per 100k people. Data shown from 1/22/20 to 7/22/20.

AK WA ID MT ND MN IL WI MI VT NH ME
OR NV WY SD IA IN OH PA NJ CT RI
CA UT CO NE MO KY WV VA MD DE
AZ NM KS AR TN NC SC DC
OK LA MS AL GA
HI TX FL PR

NEW
BY REGION
See the latest data in your region
Explore stats and trends specific to your country or U.S. state

Country or state... >

TESTING TRENDS TOOL
Track trends in COVID-19 cases and tests

NEW
STATE TIMELINE
Impact of opening and closing decisions by state

NEW CASES OF COVID-19 IN US STATES

Growth, Scalability, and Change

The Balancing Act

• JHU Sheridan Libraries

- Libraries and museums serving main campus
- Data Management Directorate
 - Digital Research and Curation Center (DRCC)
 - Library Applications Group
 - Data Services



JHU Data Services



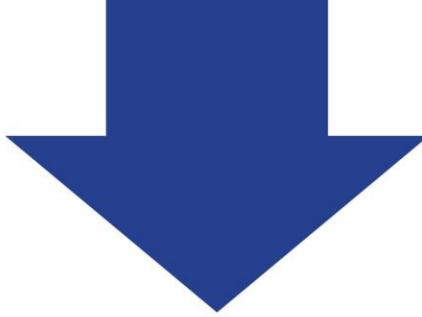
JHU Data Services



GIS Services

- Esri Education Site License
- ArcGIS Online Administration
- Consultations
- Workshops and trainings

A Balancing Act

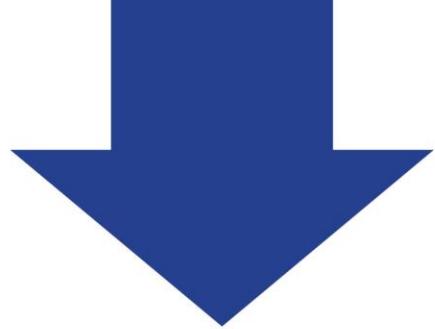


The COVID-19 Global
Dashboard



Virtual services for
campus



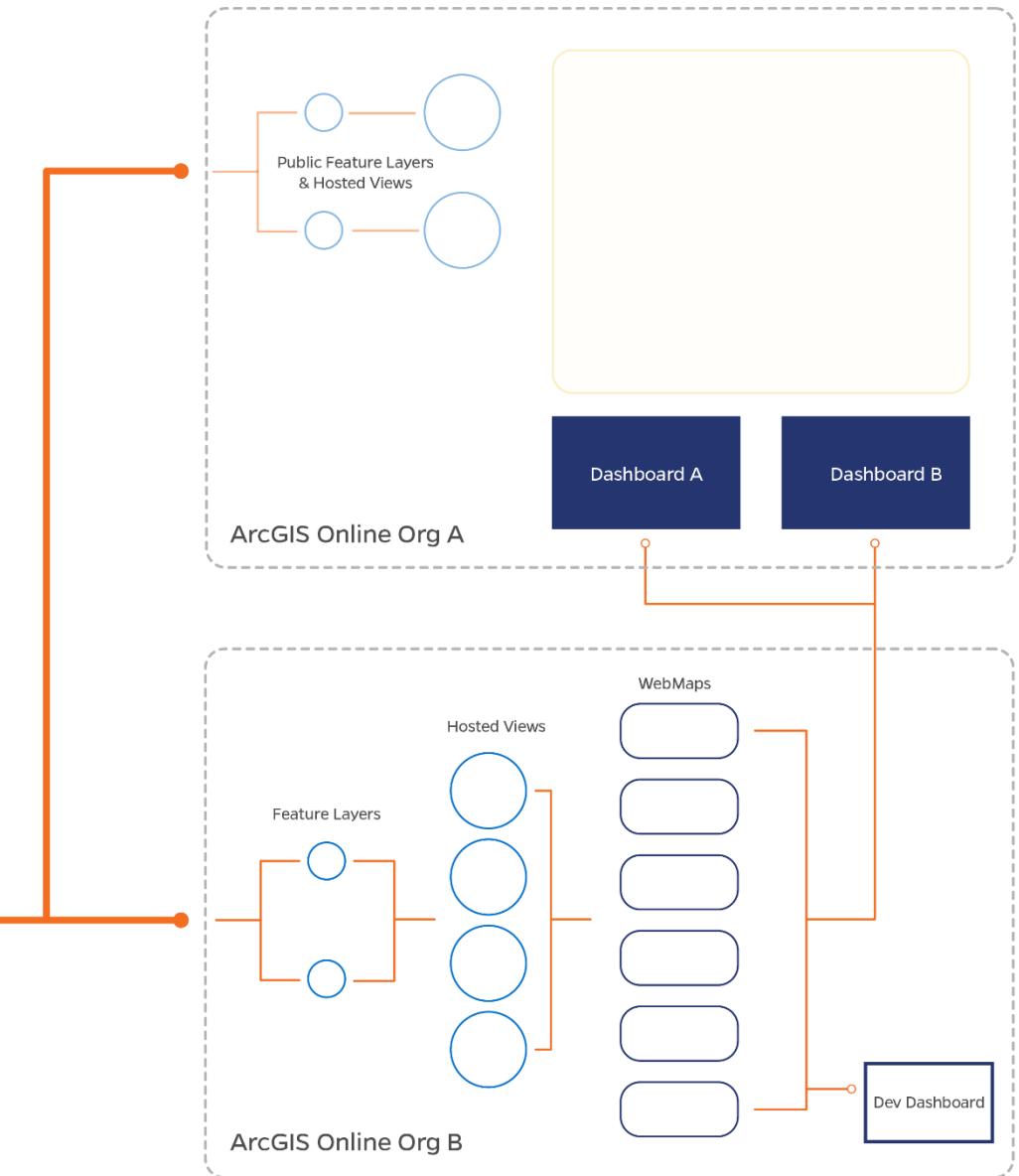
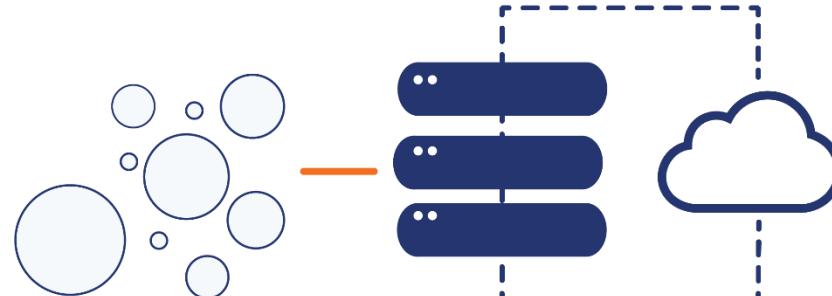


Supporting the Dashboard:

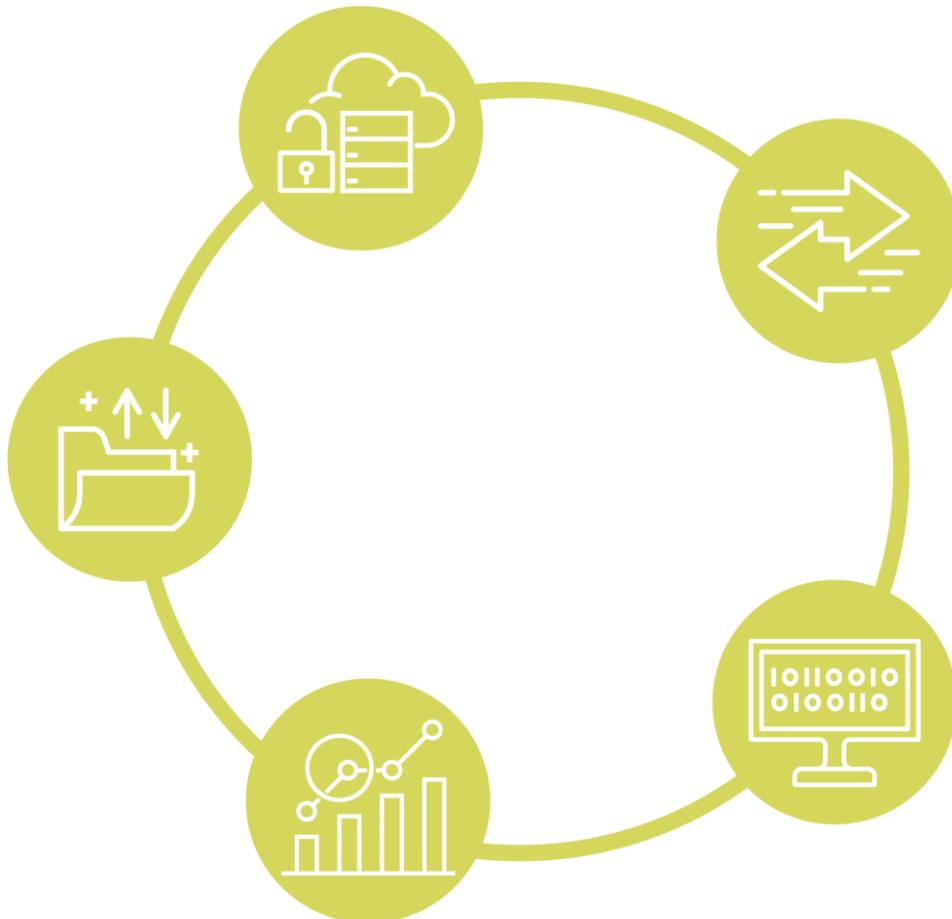
- 2 months of (almost) 24/7 support
 - Data workflow server set-up and monitoring
 - ESRI license agreement
 - Cyber security review
- Continued efforts supporting the project



COVID-19 Global Dashboard: General Workflow



Transitioning to Remote:



- Modifying service delivery
 - Converting workshops to webinars
 - Switching to video consultations
 - Offering support via chat
- Facilitating remote access to geospatial software
- Manage increased interest in dashboards and GIS overall

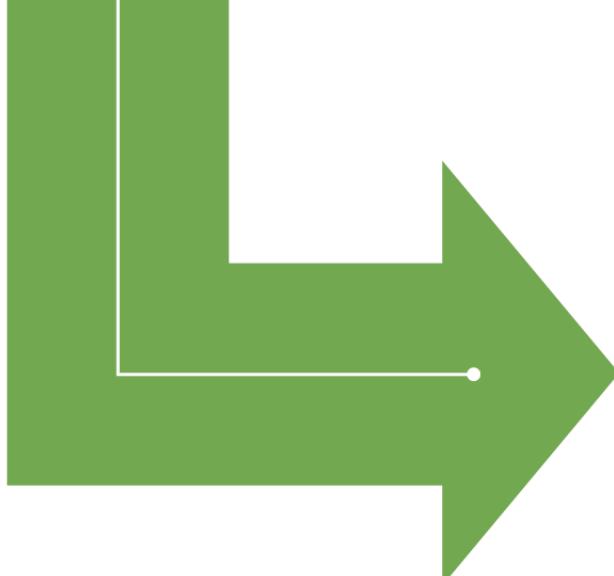




**Connection to Library Values
and Mission**

Flexibility, Adaptability, and Iteration

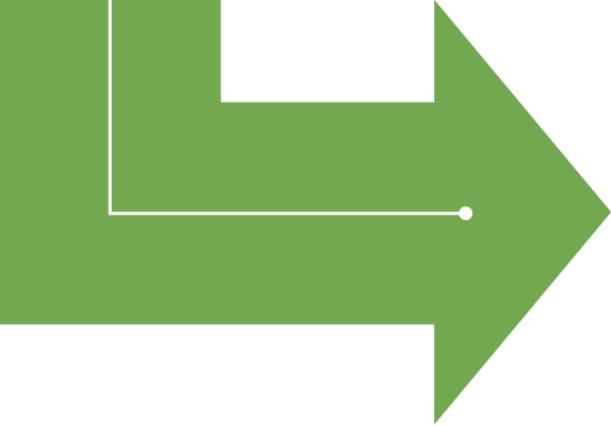
Looking Ahead



Observed Impacts and Rising Trends:

Observed Impacts and Rising Trends:

Increased Visibility of Geospatial Technology



EDITORS' PICK | 656,007 views | Mar 16, 2020, 11:48am EDT

Coronavirus Map: How To Track Coronavirus Spread Across The Globe



Trevor Nace Senior Contributor
Science
[Explore More](#)



CNN Health Food Fitness Wellness Parenting Vital Signs

This map tracks the coronavirus in real time

By Scottie Andrew, CNN
Updated 8:56 PM ET, Wed January 29, 2020

Coronavirus outbreak

Coronavirus world map: which countries have the most Covid-19 cases and deaths?

Covid-19 has spread around the planet, sending billions of people into lockdown as health services struggle to cope. Find out where the virus has spread, and where it has been most deadly

- Coronavirus map of the UK
- Coronavirus map of the US
- Coronavirus cases in Australia

Pablo Gutiérrez and Séan Clarke

Tue 28 Jul 2020 03.56 EDT

Coronavirus updates

Mapping the curve: how GIS is helping the Covid-19 response

Written by [Katie Burton](#) Published in [Development](#)

Editorial | [Open Access](#) | Published: 11 March 2020

Geographical tracking and mapping of coronavirus disease COVID-19/severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic and associated events around the world: how 21st century GIS technologies are supporting the global fight against outbreaks and epidemics

[Maged N. Kamel Boulos](#) & [Estella M. Geraghty](#)

International Journal of Health Geographics 19, Article number: 8 (2020) | [Cite this article](#)

106k Accesses | 41 Citations | 321 Altmetric | [Metrics](#)



COVID-19: Firefighters Turn to Apps, Maps and Dashboards to Communicate and Act

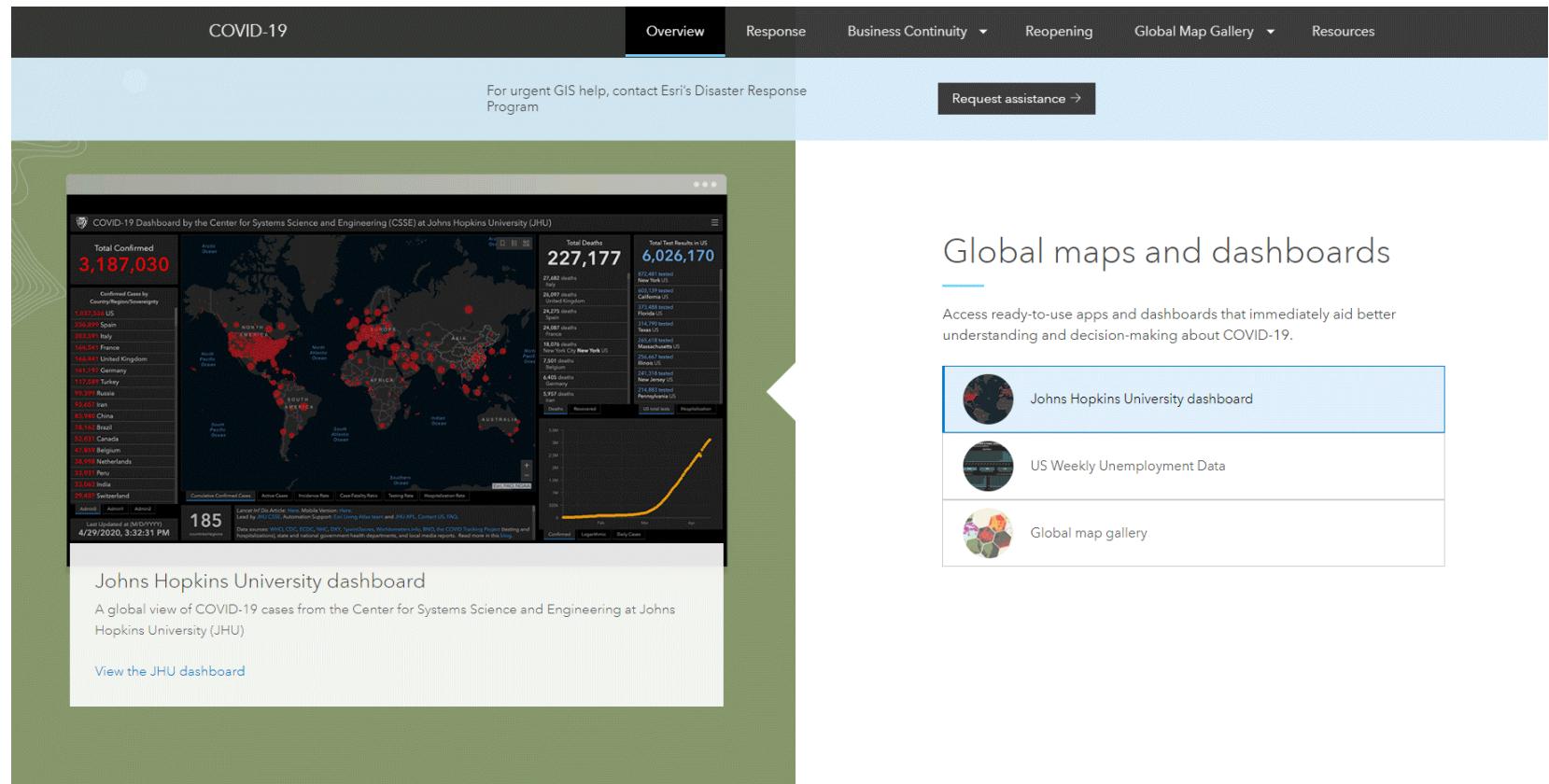
Public Safety
July 07, 2020



Mike Cox

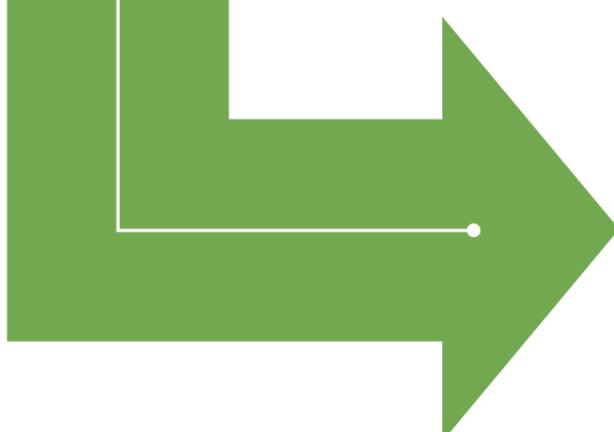
Observed Impacts and Rising Trends:

Growing Awareness of the Esri Web Ecosystem and Tools



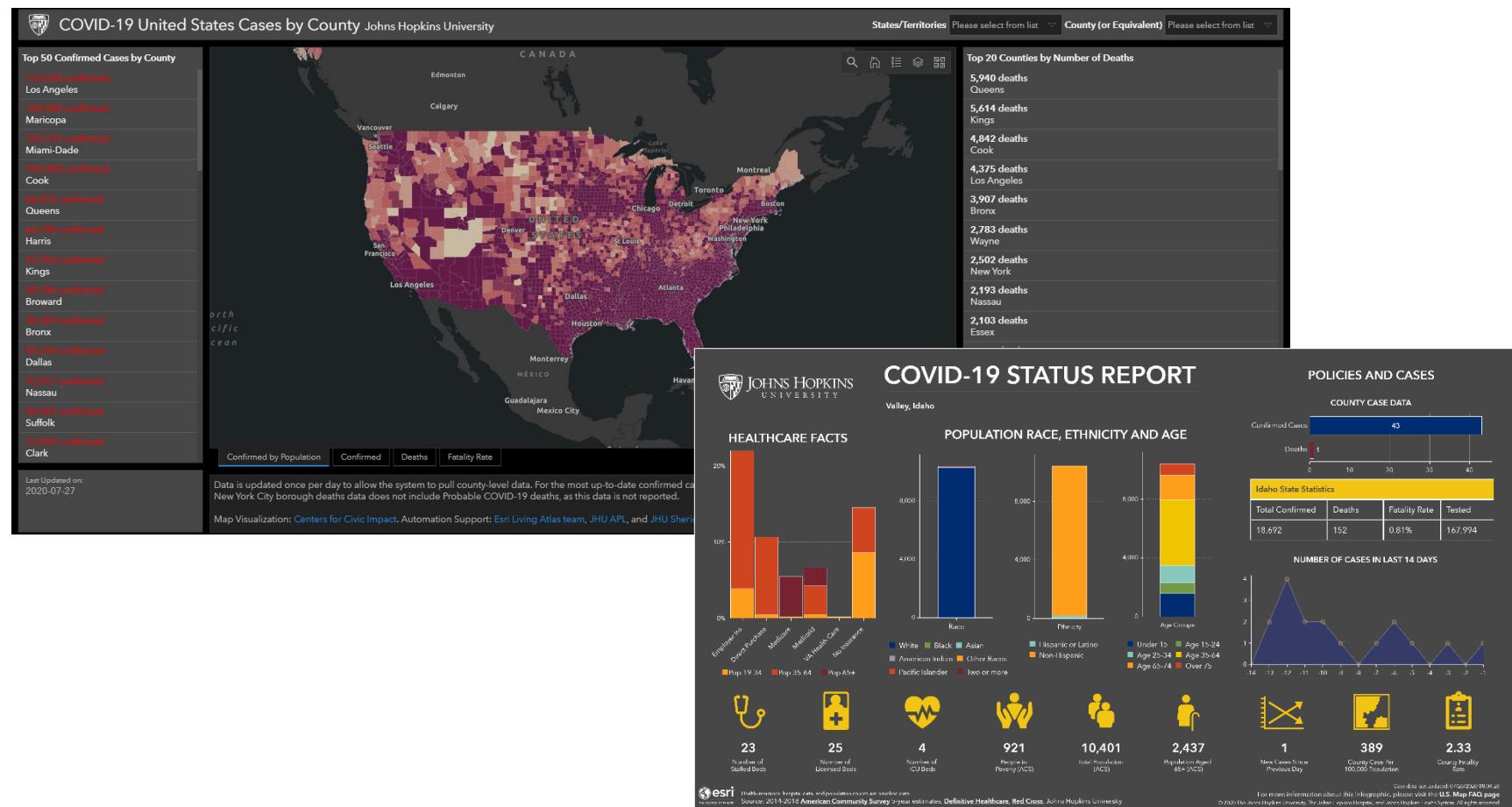
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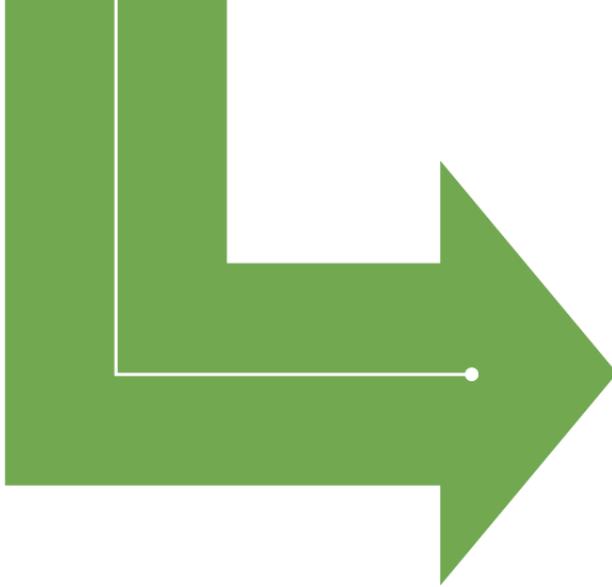
Data Services



Observed Impacts and Rising Trends:

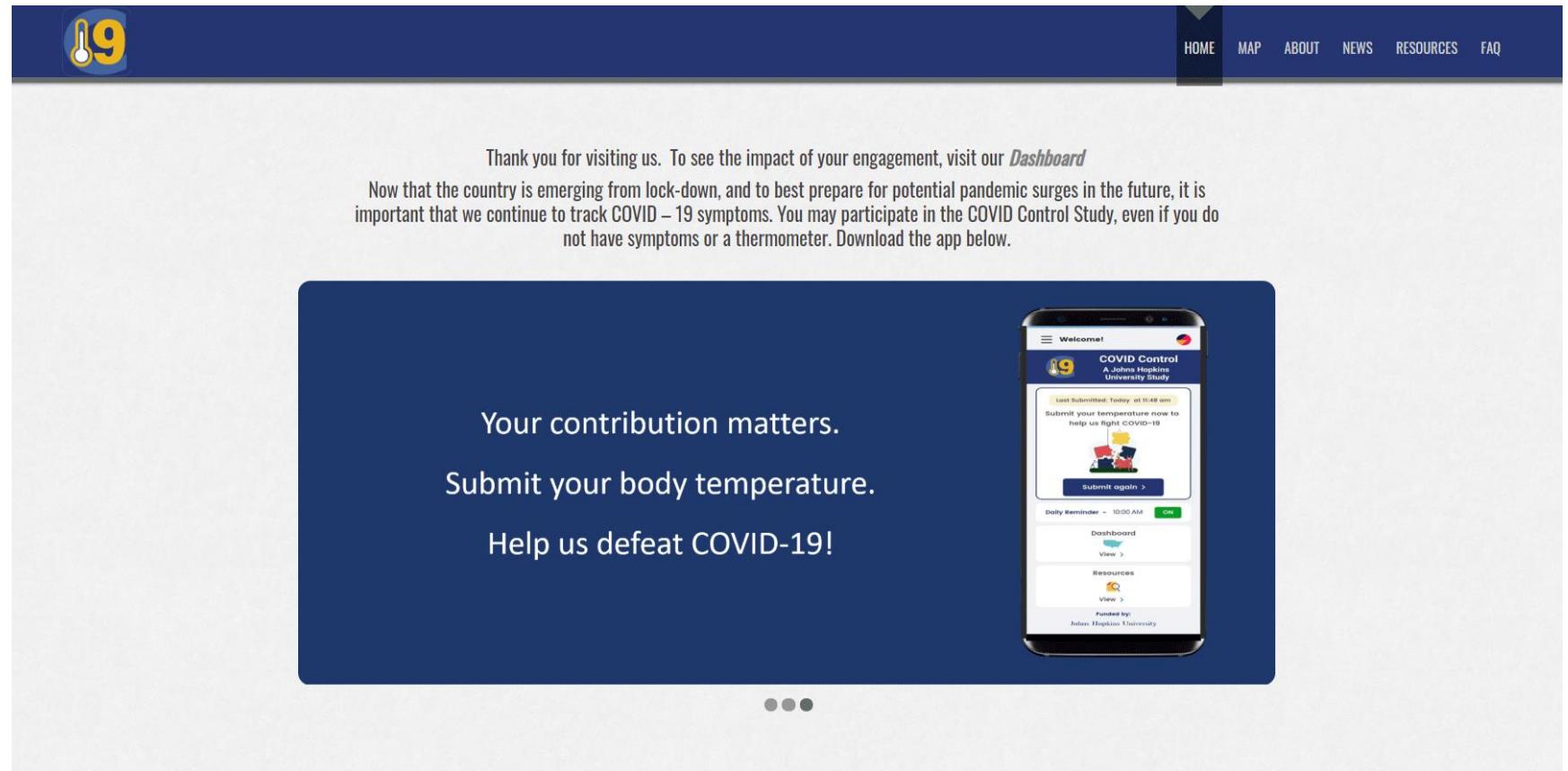
Growing Interest in Using Geospatial Technology for Research Projects





Observed Impacts and Rising Trends:

From Research Project to Public-facing, Public-serving Product



The image shows a screenshot of a website and a mobile application for the COVID Control study. The website header features a thermometer icon with the number '19' and a blue navigation bar with links for HOME, MAP, ABOUT, NEWS, RESOURCES, and FAQ. The main content area of the website includes a message of thanks for visiting, a call to track COVID-19 symptoms, and a dark blue call-to-action box with text: 'Your contribution matters.', 'Submit your body temperature.', and 'Help us defeat COVID-19!'. Below this box are three small white dots. To the right of the website is a mobile phone displaying the 'COVID Control A. Johns Hopkins University Study' app. The app's interface includes a 'Welcome!' message, a 'Submit your temperature now to help us fight COVID-19' button, a 'Daily Reminder' section, and a navigation menu with options like 'Dashboard', 'Resources', and 'Funded by: Johns Hopkins University'.

19

HOME MAP ABOUT NEWS RESOURCES FAQ

Thank you for visiting us. To see the impact of your engagement, visit our [Dashboard](#)

Now that the country is emerging from lock-down, and to best prepare for potential pandemic surges in the future, it is important that we continue to track COVID – 19 symptoms. You may participate in the COVID Control Study, even if you do not have symptoms or a thermometer. Download the app below.

Your contribution matters.

Submit your body temperature.

Help us defeat COVID-19!

19

Welcome!

Last Submitted: Today at 11:48 am

Submit your temperature now to help us fight COVID-19

Submit again >

Daily Reminder - 10:00 AM ON

Dashboard View >

Resources View >

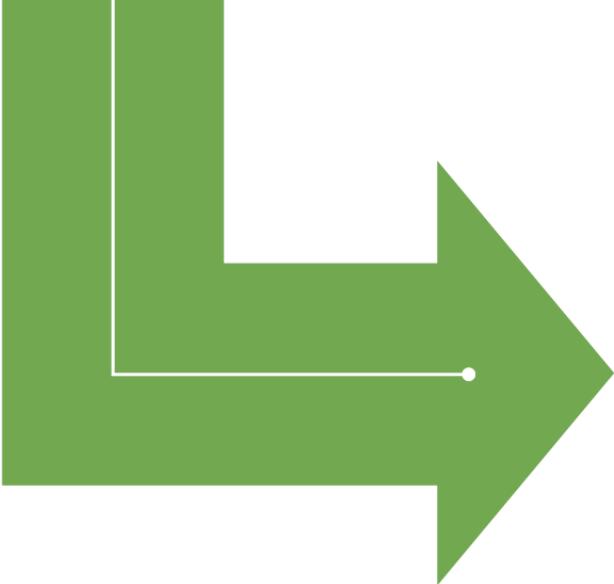
Funded by: Johns Hopkins University

Interest in and use of web GIS
continues to grow.

This calls for the
GIS education community
to carve a path to excellence

We can prepare our community
through education and training
in critical skills such as

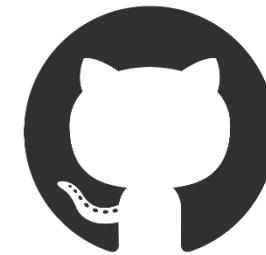
Web GIS
ArcGIS Online Administration
Programming
Project and product management



ArcGIS Online

Dashboards: **2.7 billion** views

Feature Layers: **178 billion** requests



Github Repo

Starred **23,400** times

Forked **14,600** times

In past month, 158 files were
changed with over 132,000 additions
and 14,000 deletions

Image Credits

- **Slide 3:** Screenshot taken by Ensheng Frank Dong.
- **Slide 6:** Image credit: Will Kirk/Johns Hopkins University.
- **Slide 7:** Gardner, Lauren. [@TexasDownUnder]. (2020, January 22). We are tracking the 2019-nCoV spread in real-time. [Tweet]. Retrieved from <https://twitter.com/TexasDownUnder/status/1220014483516592129>. Screenshot taken by Reina Chano Murray.
- **Slide 8:** Graphs by Reina Chano Murray.
- **Slide 9:** Animation by Reina Chano Murray.
- **Slide 17:** Animation by Reina Chano Murray.
- **Slide 18:** COVID-19 Cases US feature layer item description page. Retrieved from <https://www.arcgis.com/home/item.html?id=628578697fb24d8ea4c32fa0c5ae1843>. Screenshot taken by Reina Chano Murray.
- **Slide 19:** CSSEGISandData Github Profile. Retrieved from <https://github.com/CSSEGISandData>. Screenshot taken by Reina Chano Murray.
- **Slide 20:** Johns Hopkins University. (2020). Coronavirus Resource Center. Retrieved July 28, 2020, from <https://coronavirus.jhu.edu/>. Screenshot taken by Reina Chano Murray.
- **Slide 23:** Image credit: Megumi Shiobara Chano.
- **Slide 29:** Graphic by Reina Chano Murray.
- **Slide 35:** Screenshots taken by Reina Chano Murray.

Nace, Trevor. (2020, March 16). Coronavirus Map: How to Track Coronavirus Spread Across the Globe. Retrieved from <https://www.forbes.com/sites/trevornace/2020/03/16/coronavirus-map-how-to-track-coronavirus-spread-across-the-globe/#39458e86f980>

Burton, Katie. (2020, April 27). Mapping the curve: how GIS is helping the Covid-19 response. Retrieved from <https://geographical.co.uk/people/development/item/3676-how-gis-is-helping-the-covid-19-response>

Andrew, Scottie. (2020, January 29). This map tracks the coronavirus in real time. Retrieved from <https://www.cnn.com/2020/01/29/health/coronavirus-map-real-time-tracking-trnd/index.html>

Image Credits

Cox, Mike. (2020, July 7). COVID-19: Firefighters Turn to Apps, Maps and Dashboards to Communicate and Act. Retrieved from <https://www.esri.com/about/newsroom/blog/fire-chiefs-use-apps-maps-and-dashboards/>

Gutierrez, Pablo and Sean Clarke. (2020). Coronavirus world map: which countries have the most Covid-19 cases and deaths? Retrieved July 28, 2020 from <https://www.theguardian.com/world/2020/aug/05/coronavirus-world-map-which-countries-have-the-most-covid-19-cases-and-deaths>

Kamel Boulos, M. N., & Geraghty, E. M. (2020). Geographical tracking and mapping of coronavirus disease COVID-19/severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic and associated events around the world: how 21st century GIS technologies are supporting the global fight against outbreaks and epidemics. *International Journal of Health Geographics*, 19(1). <https://doi.org/10.1186/s12942-020-00202-8>

- **Slide 36:** Esri. (2020). *Coronavirus Disease (COVID-19) Maps, Solutions & Resources*. Esri. Retrieved from <https://www.esri.com/en-us/covid-19/overview>. Animation by Reina Chano Murray.
- **Slide 37:** Centers for Civic Impact. (2020). COVID-19 United States Cases by County. Retrieved July 27, 2020 from <https://coronavirus.jhu.edu/us-map>. Screenshots taken by Reina Chano Murray.
- **Slide 38:** COVID Control – A Johns Hopkins University Study. (2020). Covid Control. Retrieved July 27, 2020 from <https://covidcontrol.jhu.edu/>. Screenshots taken by Reina Chano Murray.