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and Engineering

Seeing Red: Tracking the Global Pandemic in Real-time with the Johns Hopkins University CSSE Dashboard

Ensheng Dong

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The Center for Systems Science and Engineering (CSSE)
Department of Civil and Systems Engineering (CaSE)
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Bloomberg School of Public Health (SPH)
Johns Hopkins University

Last Updated at (M/D/YYYY)
11/8/2021, 9:21 PM

Total Cases
250,316,153

Total Deaths
5,055,359

Total Vaccine Doses Administered
7,286,100,235

Cases | Deaths by
 Country/Region/Sovereignty

US
 28-Day: **2,113,928** | **39,956**
 Totals: **46,613,052** | **755,634**

28-Day Cases
11,964,280

28-Day Deaths
196,141

28-Day Vaccine Doses Administered
702,546,234

United Kingdom
 28-Day: **1,154,372** | **4,097**
 Totals: **9,379,286** | **142,293**

Russia
 28-Day: **992,638** | **29,665**
 Totals: **8,689,818** | **243,405**

Turkey
 28-Day: **789,127** | **5,947**
 Totals: **8,261,473** | **72,314**

Ukraine
 28-Day: **561,268** | **14,325**
 Totals: **3,233,178** | **77,156**

Germany
 28-Day: **474,026** | **2,350**
 Totals: **4,801,425** | **96,599**

India
 28-Day: **395,380** | **10,275**
 Totals: **34,366,987** | **461,057**

Romania
 28-Day: **350,242** | **11,335**
 Totals: **1,711,137** | **50,996**

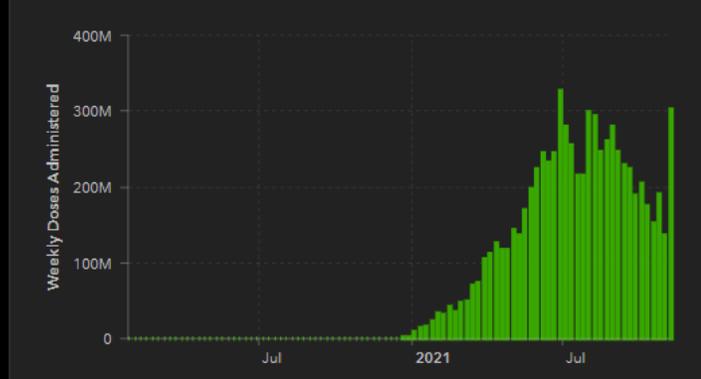
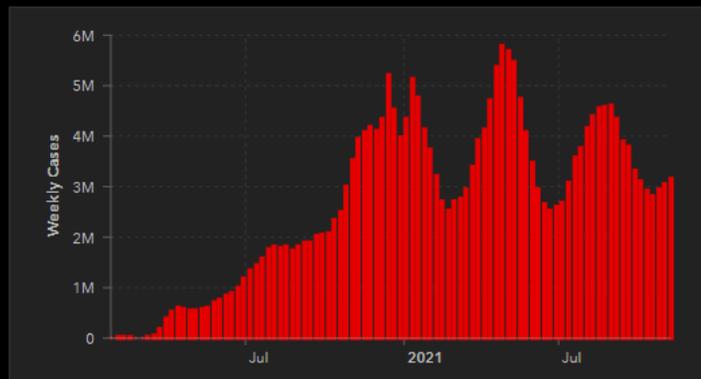
Brazil
 28-Day: **304,619** | **8,436**
 Totals: **21,886,077** | **609,573**

Iran
 28-Day: **284,924** | **4,707**
 Totals: **5,996,155** | **127,439**

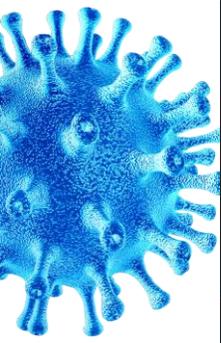
Thailand
 28-Day: **257,115** | **1,973**



Esri, FAO, NOAA
 28-Day | Totals | Incidence | Case-Fatality Ratio | Global Vaccinations | US Vaccinations | Terms of Use | Powered by Esri



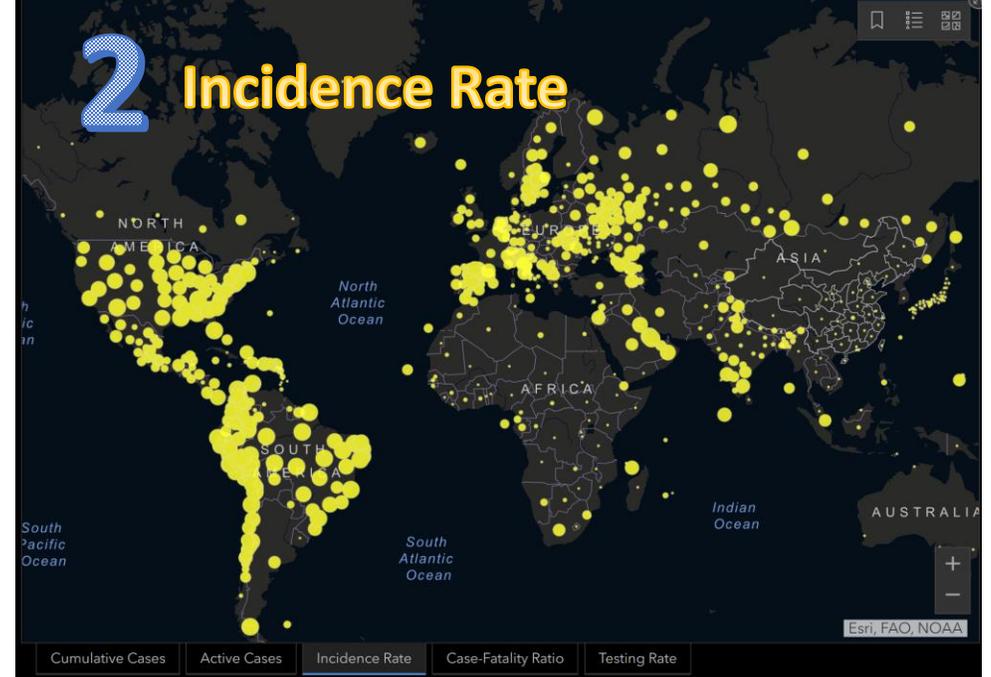
Weekly | 28-Day



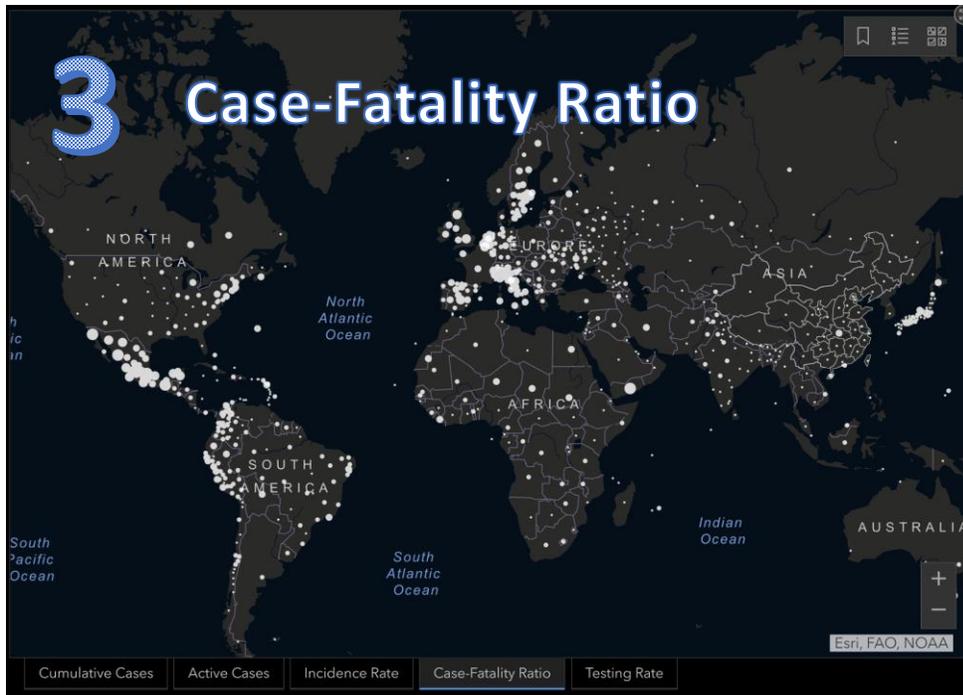
1 Total (and 28 day) Cases



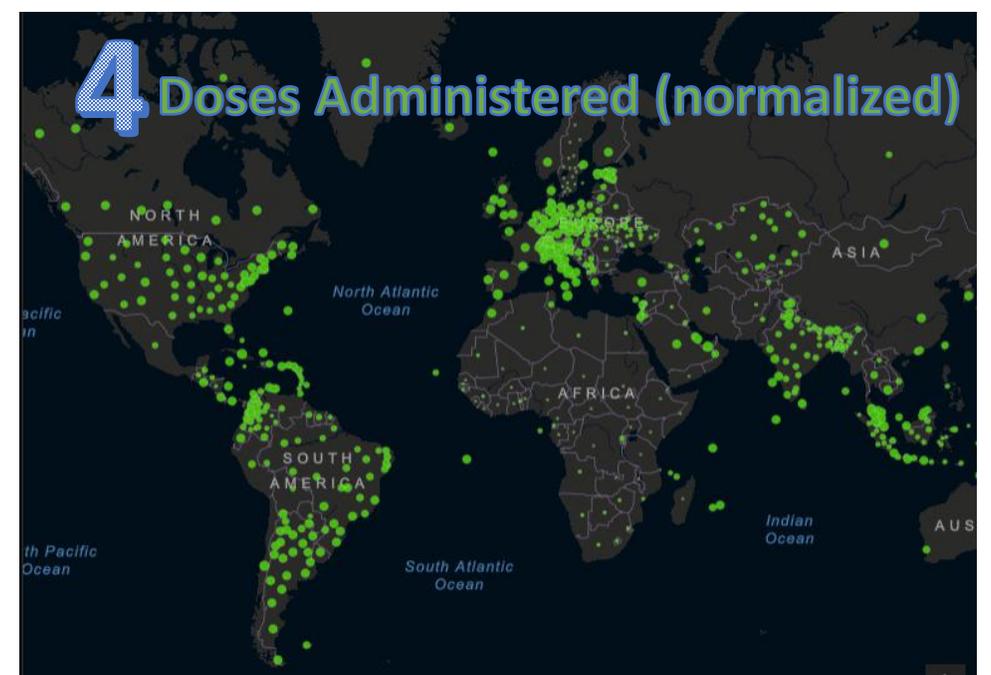
2 Incidence Rate



3 Case-Fatality Ratio



4 Doses Administered (normalized)





JHU CSSE COVID

Select Admin0
None

Filter...

- None
- Afghanistan
- Albania
- Algeria
- Andorra
- Angola
- Antigua and Barbuda
- Argentina
- Armenia
- Australia

Total Cases
215,699

Total Deaths
4,490

Total Doses Administered
5,163,223,333

Totals Cases Vaccine Plots US

JHU CSSE COVID

Select Admin0
None

Esri, FAO, NOAA

Sorted by Cases in the Past 28 Days

US
In the Past 28 Days: **3,761,826** | **23,571**
Totals: **38,721,571** | **636,838**
Total Incidence Rate: **11,752.82** per 100,000 people
Total Case-Fatality Ratio: **1.64**

India
In the Past 28 Days: **1,035,954** | **13,560**
Totals: **32,649,947** | **437,370**
Total Incidence Rate: **2,365.93** per 100,000 people
Total Case-Fatality Ratio: **1.34**

Iran
In the Past 28 Days: **1,018,252** | **14,943**
Totals: **4,895,448** | **105,901**
Total Incidence Rate: **5,828.40** per 100,000 people
Total Case-Fatality Ratio: **2.16**

United Kingdom
In the Past 28 Days: **840,131** | **2,689**
Totals: **6,697,779** | **132,566**
Total Incidence Rate: **9,866.21** per 100,000 people

Totals Cases Vaccine Plots US

JHU CSSE COVID

Select Admin0
None

Cases | Deaths in the US

Florida, US
In the Past 28 Days: **589,015** | **4,900**
Totals: **3,223,249** | **43,979**
Total Incidence Rate: **15,007.40** per 100,000 people
Total Case-Fatality Ratio: **1.36**

Texas, US
In the Past 28 Days: **423,698** | **3,097**
Totals: **3,557,337** | **56,345**
Total Incidence Rate: **12,268.42** per 100,000 people
Total Case-Fatality Ratio: **1.58**

California, US
In the Past 28 Days: **352,834** | **1,206**
Totals: **4,309,260** | **65,633**
Total Incidence Rate: **10,906.14** per 100,000 people
Total Case-Fatality Ratio: **1.52**

Georgia, US
In the Past 28 Days: **190,477** | **877**
Totals: **1,369,926** | **22,553**
Total Incidence Rate: **12,902.62** per 100,000 people
Total Case-Fatality Ratio: **1.65**

North Carolina, US
In the Past 28 Days: **141,220** | **684**
Totals: **1,189,296** | **14,319**
Total Incidence Rate: **11,339.50** per 100,000 people
Total Case-Fatality Ratio: **1.20**

Louisiana, US
In the Past 28 Days: **138,117** | **1,360**
Totals: **679,796** | **12,359**
Total Incidence Rate: **14,623.06** per 100,000 people
Total Case-Fatality Ratio: **1.82**

Tennessee, US
In the Past 28 Days: **128,024** | **614**
Totals: **1,021,578** | **13,338**
Total Incidence Rate: **14,959.03** per 100,000 people
Total Case-Fatality Ratio: **1.31**

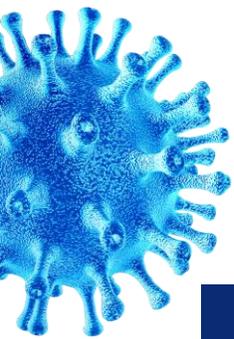
New York, US
In the Past 28 Days: **113,218** | **520**

Totals Cases Vaccine Plots US



Mobile version:

<https://www.arcgis.com/apps/opsdashboard/index.html#/85320e2ea5424dfaaa75ae62e5c06e61>



More Data

JOHNS HOPKINS UNIVERSITY & MEDICINE | CORONAVIRUS RESOURCE CENTER

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COVID-19 STATUS REPORT

Providence, RI

HEALTHCARE FACTS

Insurance Type	Pop 19-34	Pop 35-64	Pop 65+
Employer Ins	~13%	~17%	~10%
Direct Purchase	~3%	~2%	~1%
Medicare	~1%	~1%	~1%
Medicaid	~4%	~10%	~1%
VA Health Care	~1%	~1%	~1%
No Insurance	~3%	~2%	~1%

2,425 Number of Staffed Beds
2,700 Number of Licensed Beds
333 Number of ICU Beds

COVID-19 STATUS REPORT

TIME

DOUBLE ISSUE NOV. 30 / DEC. 7, 2020

THE BEST INVENTIONS OF 2020

100 INNOVATIONS CHANGING HOW WE LIVE

POLICIES AND CASES

COUNTY CASE DATA

Confirmed Cases: 27,808
Deaths: 988

Rhode Island State Statistics

Total Confirmed	Deaths	Fatality Rate	Tested
40,764	1,250	3.07%	474,414

NUMBER OF CASES IN LAST 14 DAYS

0 New Cases Since Previous Day
4,372 County Case Per 100,000 Population
3.55 County Fatality Rate

Case data last updated: 11/13/2020 06:38:54
For more information about this infographic, please visit the [U.S. Map FAQ page](#)
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esri THE SCIENCE OF WHERE
Health insurance, hospital data, and population counts are baseline data. Source: 2014-2018 American Community Survey 5-year estimates, Definitive Healthcare, Red Cross, Johns Hopkins University

Data is updated once per day to allow the system to pull county-level data for the most up-to-date confirmed cases and deaths, please see the COVID-19 Global Map. New York City borough deaths data does not include Probable COVID-19 deaths, as this data is not reported.

Last Updated on: 2020-11-12

Confirmed Deaths



TIMELINE OF JHU COVID-19 DASHBOARD

- DEC 31** - CHINA ALERTS WHO. THE DISEASE GOES ON TO BE NAMED COVID-19.
- JAN 11** - FIRST DEATH LINKED TO COVID-19.
- JAN 21** - CDC CONFIRMS FIRST US COVID-19 CASE.
- JAN 22** - DASHBOARD LAUNCHED.
- JAN 23** - WUHAN CITY LOCKDOWN.

Dashboard Inception

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...

2019-nCoV Global Cases As of Jan 22, 2020

Hubel	Confirmed: 270; Suspected: 11
Guangdong	Confirmed: 17; Suspected: 4
Beijing	Confirmed: 10; Suspected: 0
Shanghai	Confirmed: 9; Suspected: 10
Zhejiang	Confirmed: 5; Suspected: 16
Chongqing	Confirmed: 5; Suspected: 0
Sichuan	Confirmed: 2; Suspected: 1
Tianjin	Confirmed: 2; Suspected: 0

Data sources: WHO, CDC and NHC. Downloadable Google Sheet: [Here](#).

11:04 AM · Jan 22, 2020 · Twitter Web App

1.7K Retweets **2.1K** Likes

Dashboard Stats

Feature Layers:

222,520,231,938

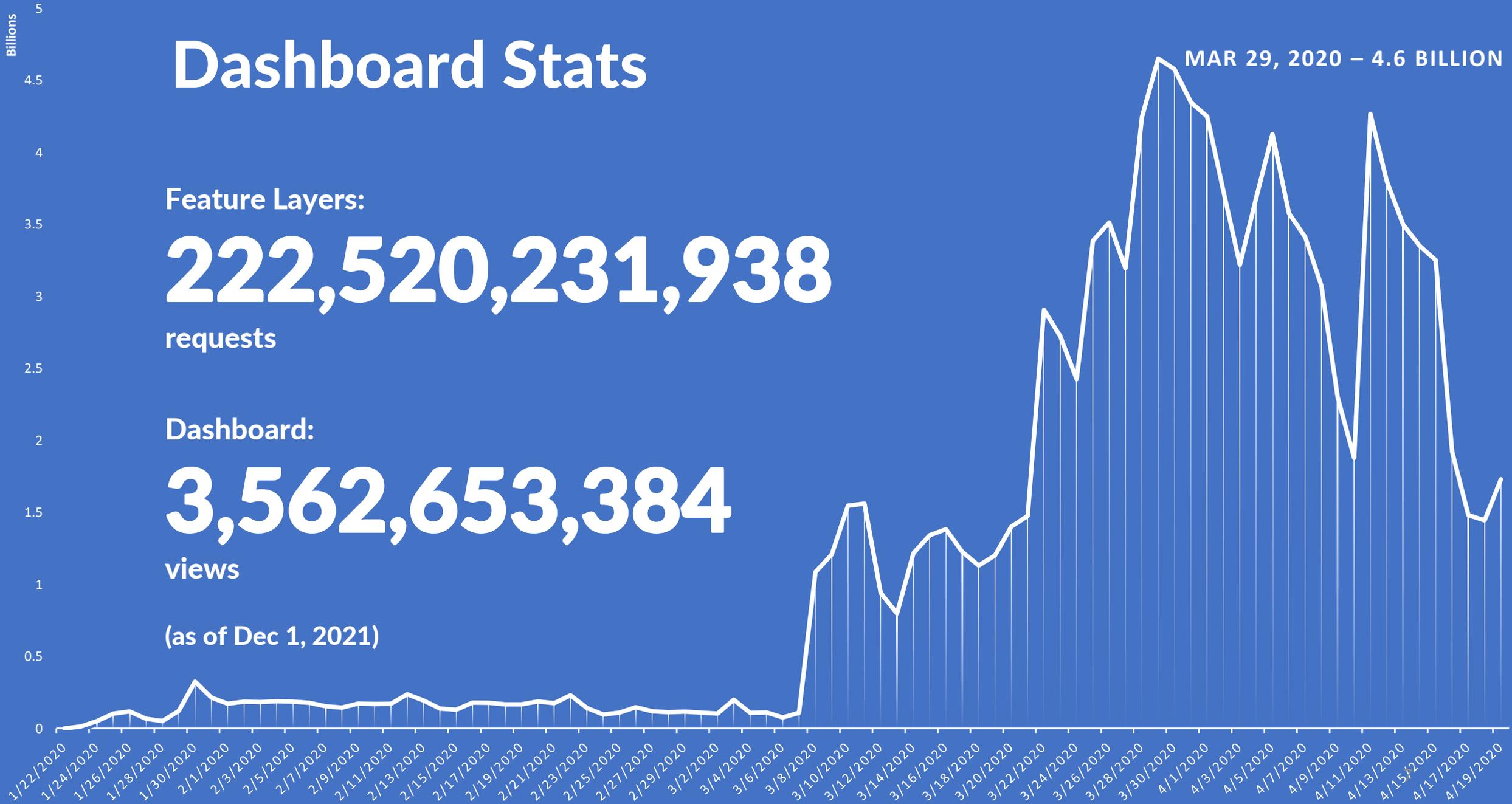
requests

Dashboard:

3,562,653,384

views

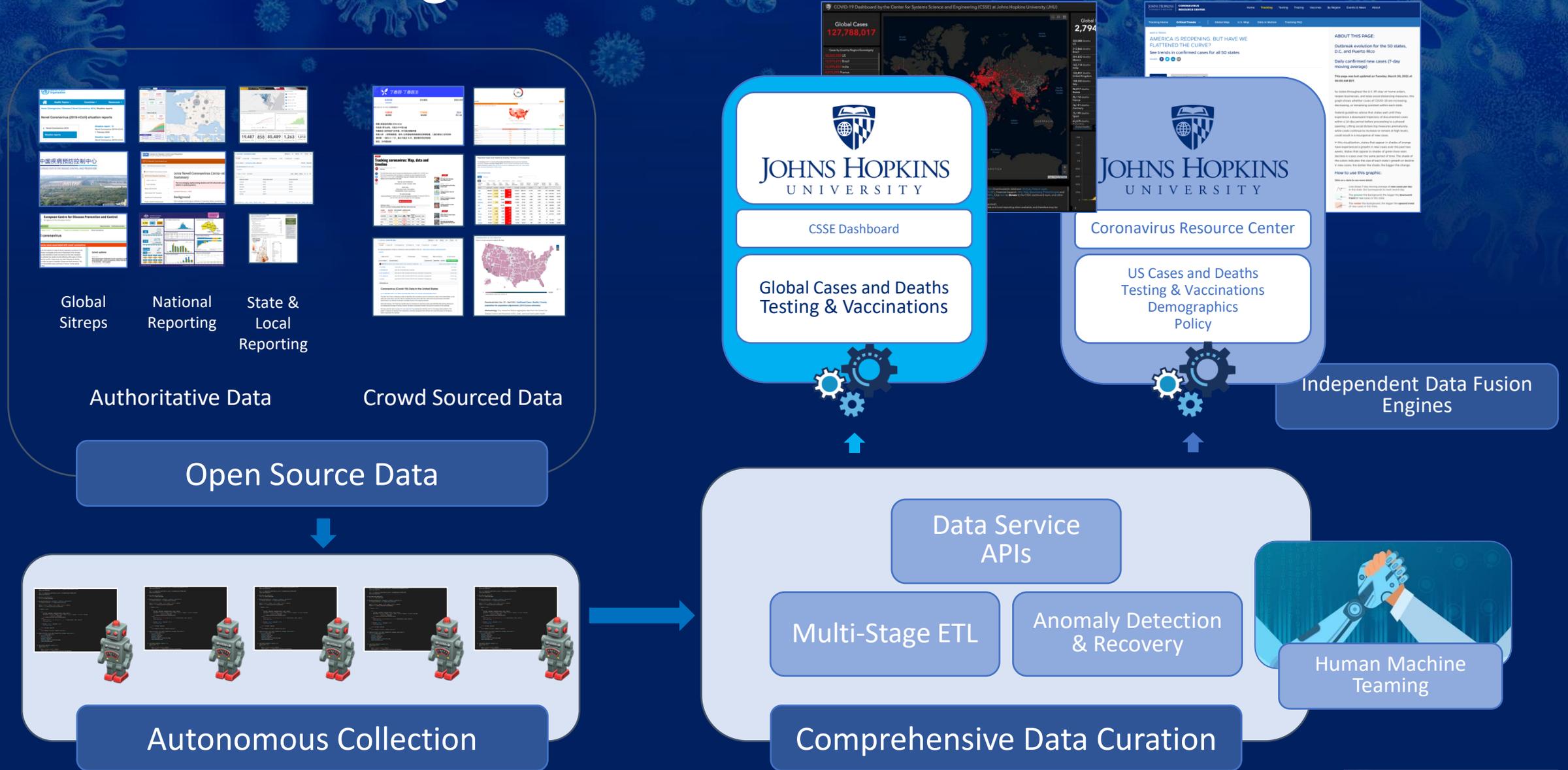
(as of Dec 1, 2021)

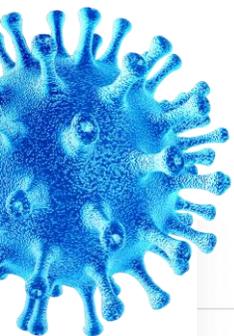


Data, Data, Data

Data pipeline, automation, anomaly detection, etc.

The Ever-evolving Architecture





Where to find the raw data?

<https://github.com/CSSEGISandData/COVID-19>



CSSEGISandData

Edit profile

3.2k followers · 0 following · 0 stars

CSSE at Johns Hopkins University

Baltimore, MD

<https://systems.jhu.edu/>

Organizations



Overview

Repositories 3

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COVID-19

Public

Novel Coronavirus (COVID-19) Cases, provided by JHU CSSE

27.7k stars 17.8k forks

COVID-19_Unified-Dataset

Public

Unified COVID-19 Dataset

111 stars 41 forks

COVID-20

Public

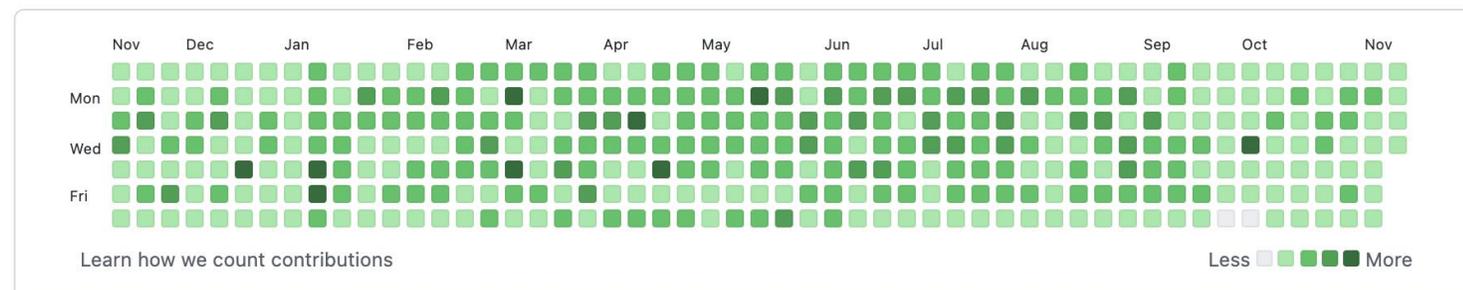
Forked from govex/COVID-19

Data analysis and visualizations of daily COVID cases report

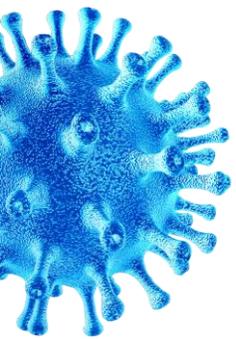
1 star

3,264 contributions in the last year

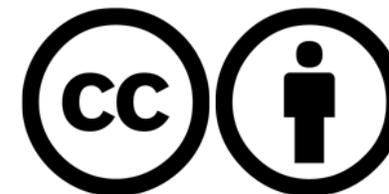
Contribution settings



Please cite our Lancet Article for any use of this data in a publication:
[An interactive web-based dashboard to track COVID-19 in real time](#)

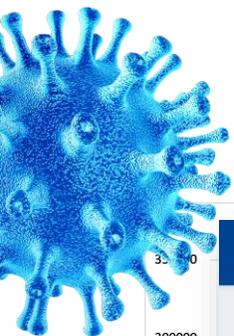


Yes, everyone can use it!

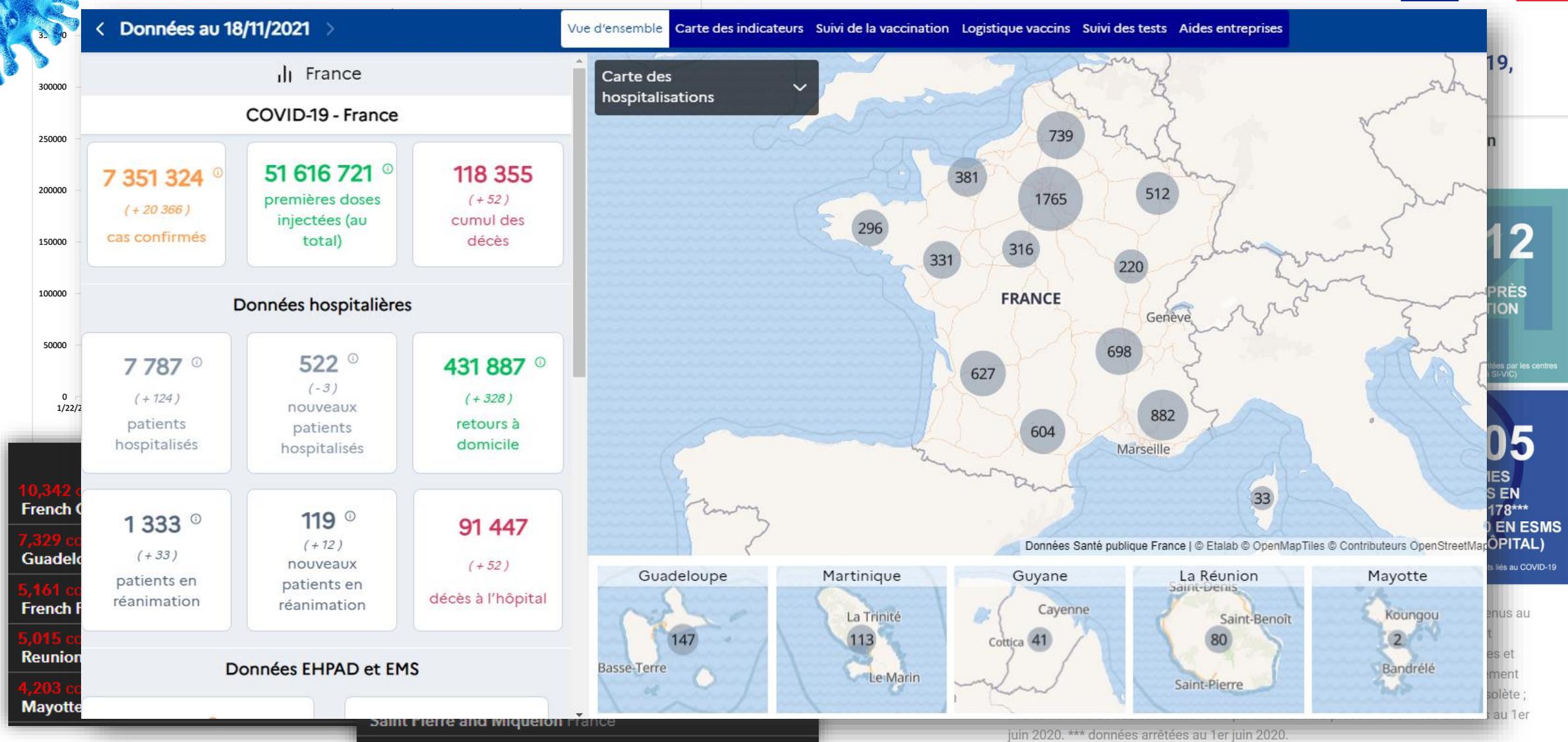
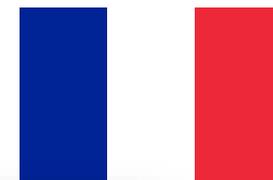


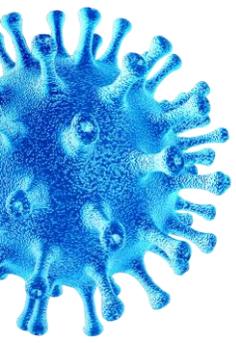
Challenges

Data validation, back distribution, correction, etc.



“Mysterious” French Data





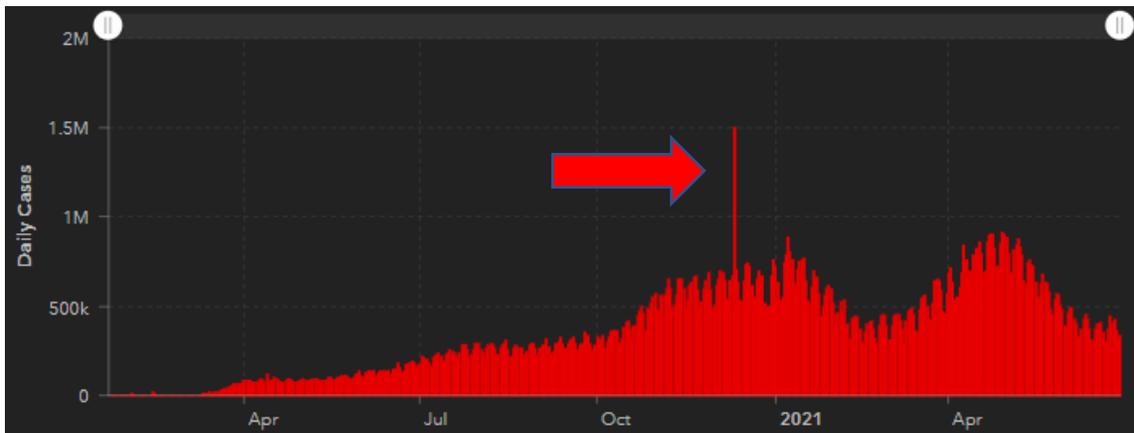
Turkish Spike



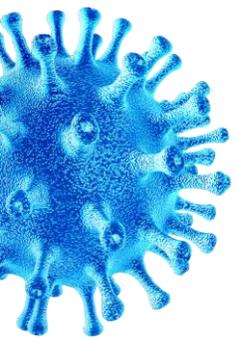
REPUBLIC OF TURKEY MINISTRY COVID-19 INFORMATION PAGE

[Homepage](#) [Gene](#)

Date	Total Number of Tests	Total Number of Patients	Total Number of Deaths	Pneumonia Rate in Patients (%)	The Number of Seriously Ill Patients
Dec 11, 2020	20.709.452	1.780.673	15.977	3,1	5.952
Dec 10, 2020	20.500.579	1.748.567	15.751	3,1	5.943
Dec 9, 2020	20.294.377	558.517	15.531	3,1	5.901
Dec 8, 2020	20.089.966	552.304	15.314	3,1	5.882
Dec 7, 2020	19.888.747	545.711	15.103	3,1	5.836



Contact us if you know something:
@JHUSystems



Null Island and Privacy Concerns

Local Coronavirus Confusion Cleared Up By Johns Hopkins

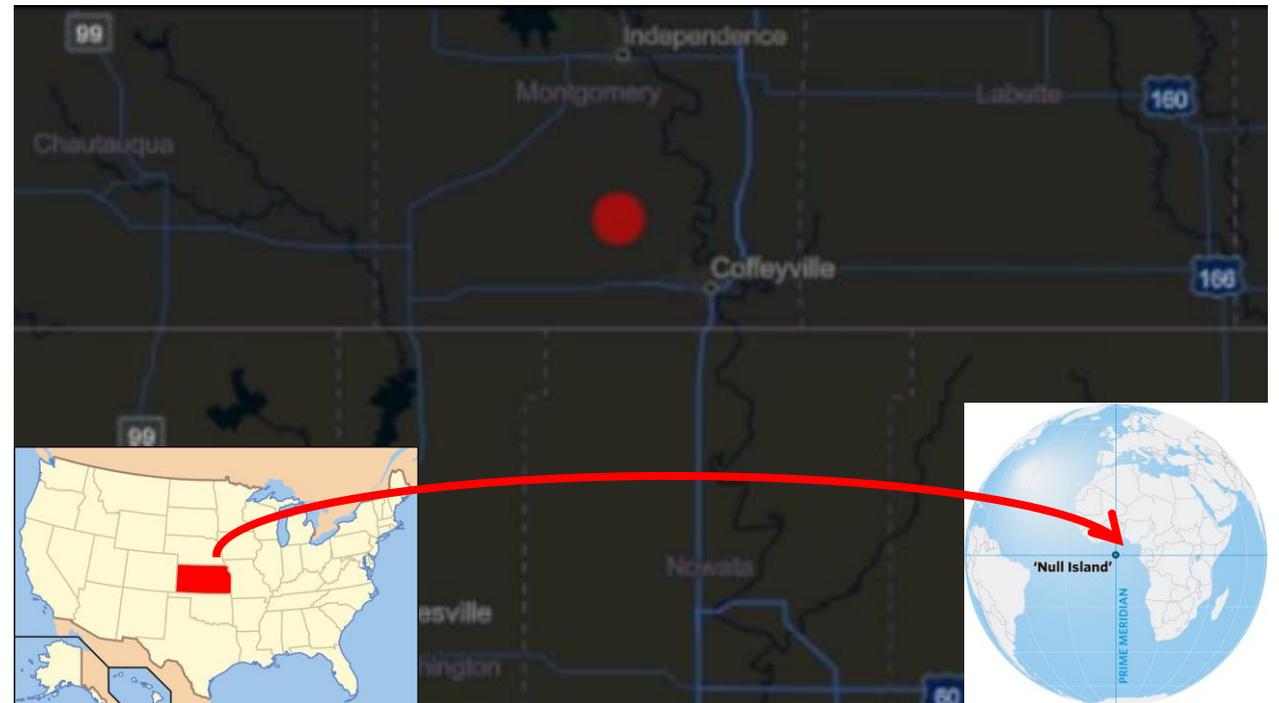
Posted: 7:25 PM, Feb 25, 2020 Updated: 9:38 PM, Feb 25, 2020

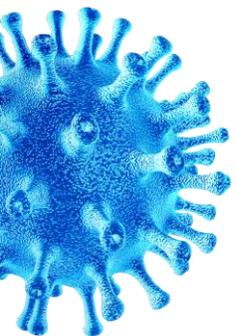


By: Dane Hawkins



<https://www.nbcnews.com/news/world/more-americans-quarantined-ship-will-be-offered-exit-n1137326>





When to update?

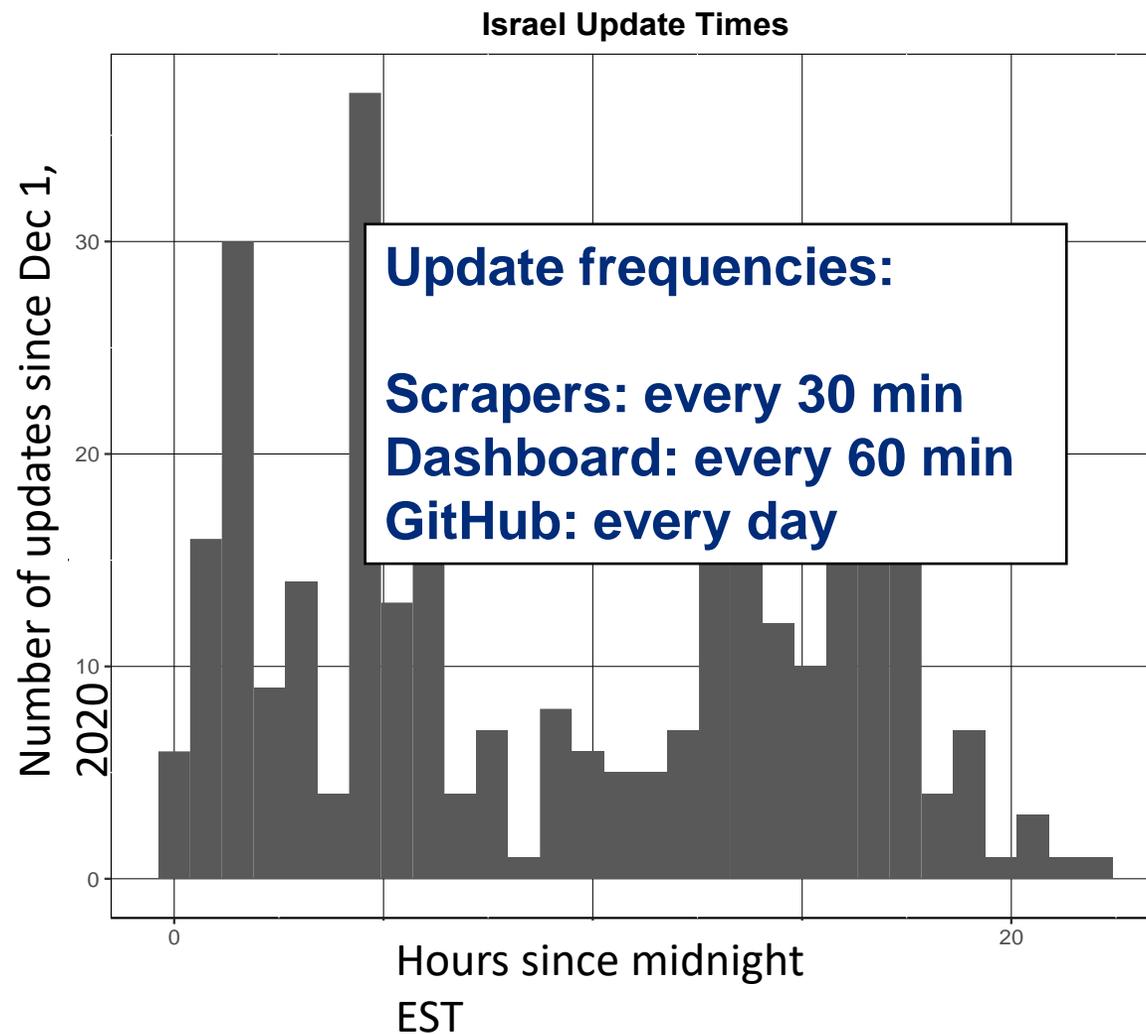
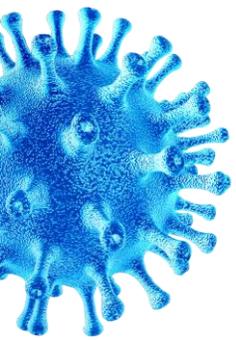


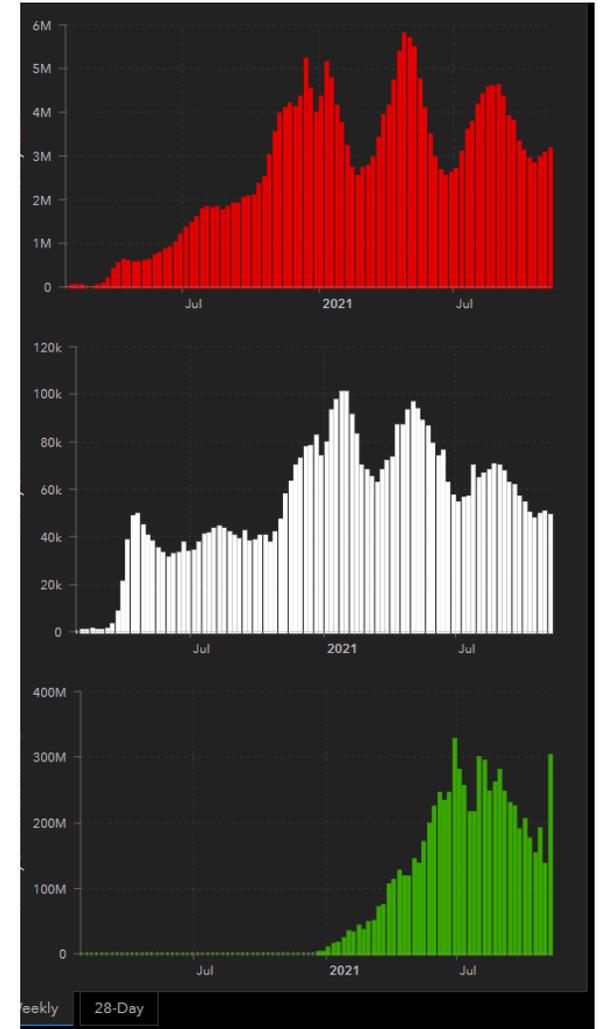
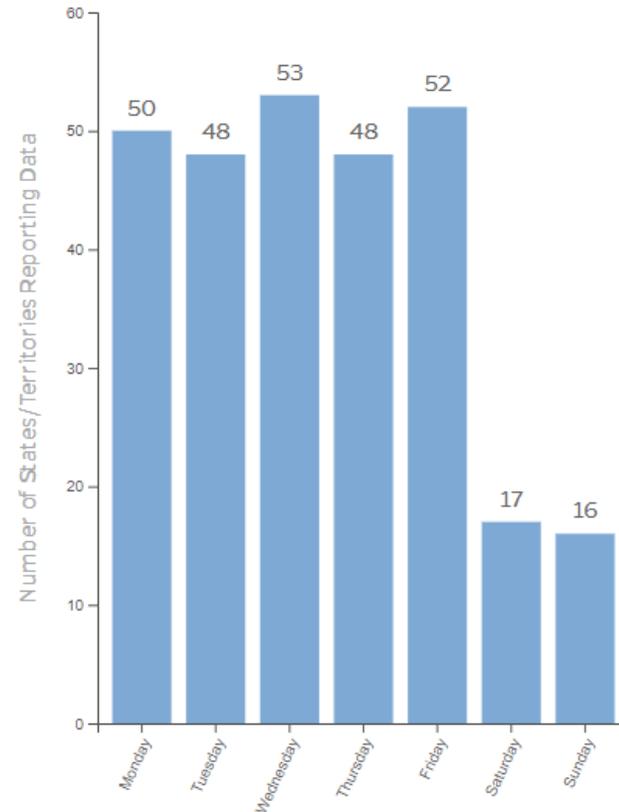
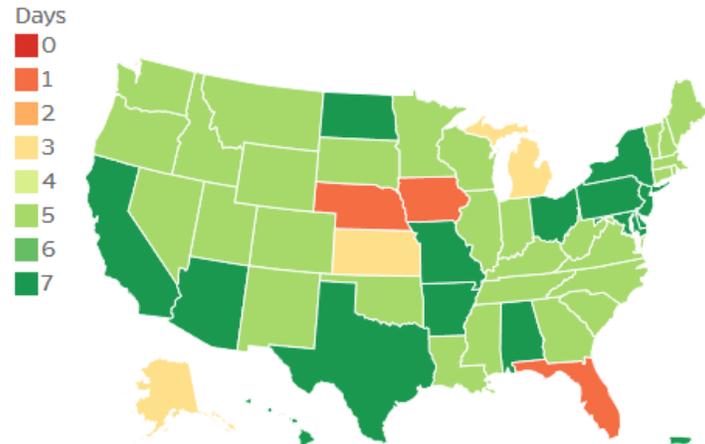
Image courtesy of
Jeremy Ratcliff
(Oxford, APL)

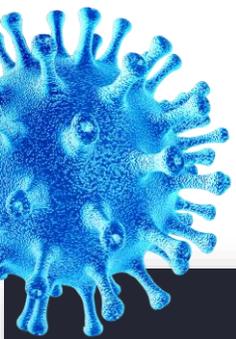


Changing Reporting Frequency

Days per week data is reported

Cases	Deaths	Tests	Vaccines	Summary
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Cyberattack



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DEC 6, 3:41 PM

Maryland Health Department Website Cyberattack



Dominique Maria Bonessi

Brazilian Ministry of Health suffers cyberattack and COVID-19 vaccination data vanishes

Hackers claimed to have copied and deleted 50 TB worth of data from internal systems.

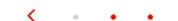


Written by **Angelica Mari**, Contributing Editor
Posted in Brazil Tech on December 10, 2021 | Topic: Security

Websites under Brazil's Ministry of Health (MoH) have suffered a major ransomware attack that resulted in the unavailability of COVID-19 vaccination data of millions of citizens.

Following that attack that took place at around 1 am today, all of MoH's websites including ConecteSUS, which tracks the trajectory of citizens in the public healthcare system, became unavailable. This includes the COVID-19 digital vaccination certificate, which is available via the ConecteSUS app.

RELATED



US, Australia and Japan stump up for subsea cable between Nauru, Kiribati and Federated States of Micronesia

Networking



Mozilla rolls out GPC for all Firefox users, but enforcement limited to two states

Security



Volvo announces some R&D files

Data Standardization and Democratization

Thoughts on Global Public Health Data Transparency

THE LANCET
Infectious Diseases

CORRESPONDENCE | ONLINE FIRST

A need for open public data standards and sharing in light of COVID-19

Lauren Gardner ✉ • Jeremy Ratcliff • Ensheng Dong • Aaron Katz

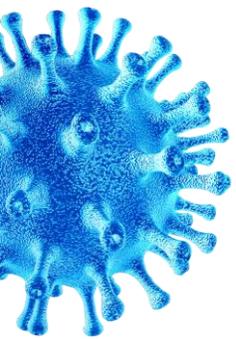
Published: August 10, 2020 • DOI: [https://doi.org/10.1016/S1473-3099\(20\)30635-6](https://doi.org/10.1016/S1473-3099(20)30635-6)

[https://doi.org/10.1016/S1473-3099\(20\)30635-6](https://doi.org/10.1016/S1473-3099(20)30635-6)

Data Democracy

- Variable definition ambiguity
- Reporting medium inconsistency
- Useful granularity
- Privacy concerns





Acknowledgements

