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COVID-19: Pandemic Preparedness and Lessons Learned

A Fireside Chat

DIA DIRECT COVID-19 Webinar Series

June 10, 2020



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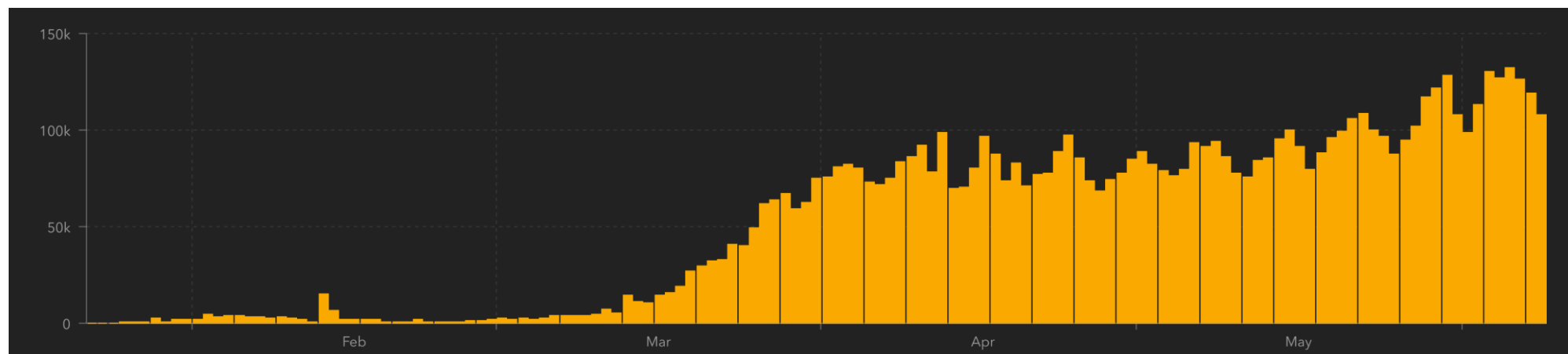
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Current Status

“We have something that turns out indeed to be my worst nightmare. In a period of four months, it has devastated the world-110,000 deaths in the US. There’s millions and millions of infections worldwide. And it isn’t over yet.”
(Anthony Fauci, NIAID, June 9, 2020)



Daily Global Cases

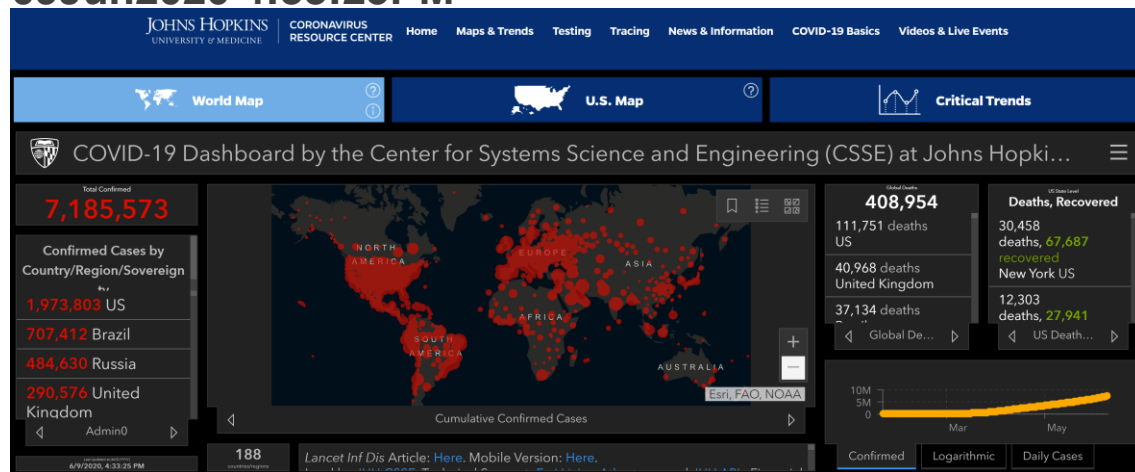


<https://coronavirus.jhu.edu/map.html>

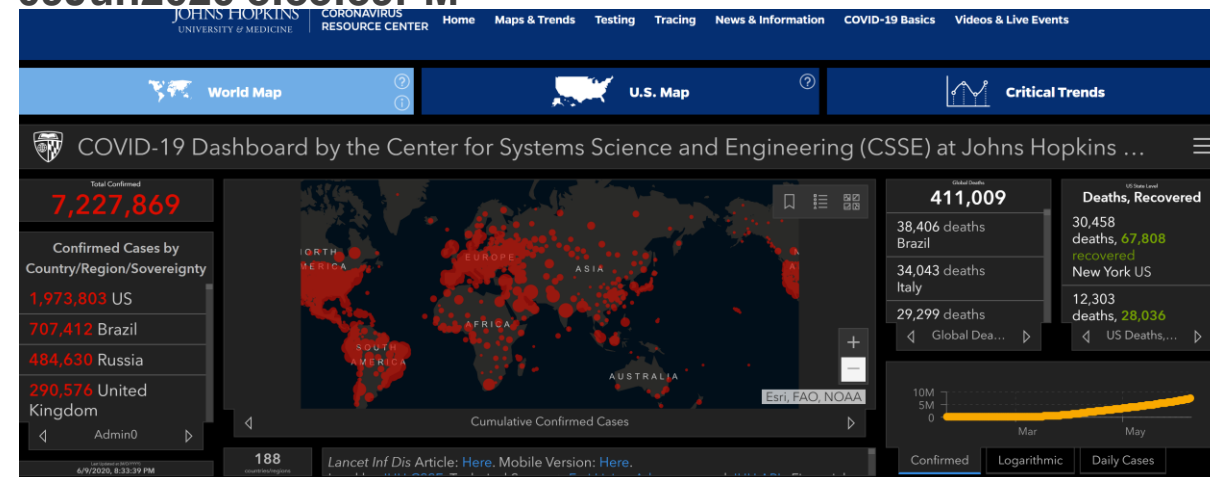
Current Status

- ▶ Johns Hopkins Coronavirus Resource Center:
<https://coronavirus.jhu.edu/map.html>

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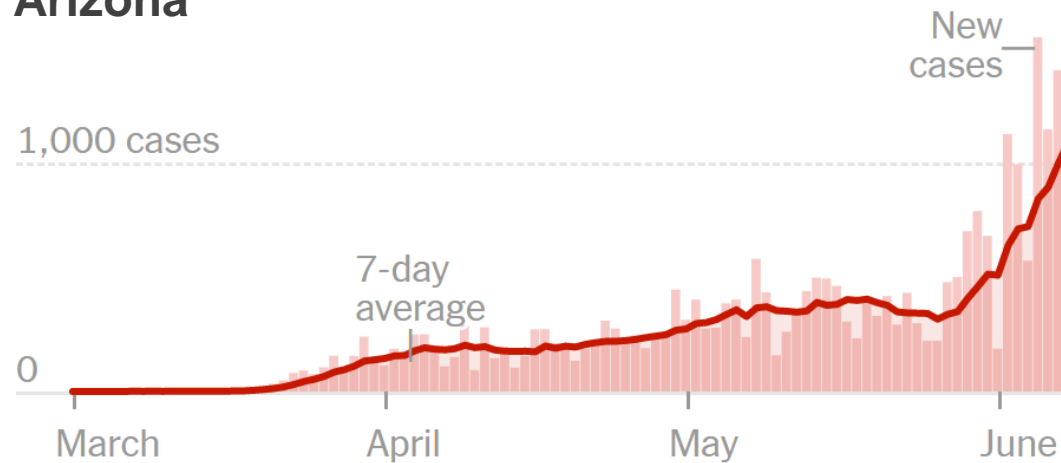
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Current Status

- ▶ As many states/countries begin to re-open, some data suggest resurgence of cases
- ▶ Officials warn that the virus may remain a persistent threat

Arizona



TOTAL CASES

28,361

DEATHS

1,074

Includes confirmed and probable cases where available

New York Times

Current Status: Vaccine and Therapeutic Development

- ▶ Development of vaccines is a top biomedical priority; Over 100 vaccine candidates in development-various platforms, some in Phase I/II trials
- ▶ Accelerated development programs and review: 10-year process→1 year
 - Moderna vaccine candidate: mRNA vaccine originally developed to prevent MERS

DNA vaccine protection against SARS-CoV-2 in rhesus macaques

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Yu et al, Science 2020

SARS-CoV-2 infection protects against rechallenge in rhesus macaques

Abishek Chandrashekar^{1*}, Jinyan Liu^{1*}, Amanda J. Martinot^{1,2*}, Katherine McMahan^{1*}, Noe B. Mercado^{1*}, Lauren Peter^{1*}, Lisa H. Tostanoski^{1*}, Jingyou Yu^{1*}, Zoltan Maliga³, Michael Nekorchuk⁴, Kathleen Busman-Sahay⁴, Margaret Terry⁴, Linda M. Wrijit², Sarah Ducat², David R. Martinez², Caroline Atyeo^{3,6}, Stephanie Fischinger³, John S. Burke³, Matthew D. Sleim³, Laurent Pessaint⁴, Alex Van Ry⁴, Jack Greenhouse⁴, Tammy Taylor⁴, Kelvin Blade⁴, Anthony Cook⁴, Brad Finneyfrock⁴, Renita Brown⁴, Elyse Teow⁴, Jason Velasco⁴, Roland Zahn⁴, Frank Wegmann⁴, Peter Abbink⁴, Esther A. Bondzie⁴, Gabriel Dagotto^{4,5}, Makda S. Gebre^{4,5}, Xuan He⁴, Catherine Jacob-Dolan^{4,5}, Nicole Kordana⁴, Zhenfeng Li⁴, Michelle A. Lifton⁴, Shant H. Mahrokhian⁴, Lori F. Maxfield⁴, Ramya Nityanandam⁴, Joseph P. Nkolola⁴, Aaron G. Schmidt^{4,6}, Andrew D. Miller^{4,6}, Ralph S. Baric², Galit Alter^{4,6}, Peter K. Sorger², Jacob D. Estes⁴, Hanne Andersen², Mark G. Lewis⁴, Dan H. Barouch^{1,6,8,†}

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- ▶ Therapeutics being tested include remdesivir, hydroxychloroquine/azithromycin and others; antibody-based therapeutics in Phase 1 (SAB-301, Monoclonal antibodies, REGN3048/REGN3051)

Current Status

- ▶ Unprecedented levels of collaboration, information-sharing, innovation
- ▶ Permanent adoption of R+D-accelerating COVID-19 measures is a top FDA priority¹
- ▶ Active discussions regarding how to sustain the momentum to ensure rapid vaccine/therapeutic development
- ▶ Many lessons learned about the need for better preparedness



Commitment and call to action: Global collaboration to accelerate new COVID-19 health technologies

A Global Collaboration to Accelerate the Development, Production and Equitable Access to New COVID-19 diagnostics, therapeutics and vaccines

A Happy Exception: The Pandemic Is Driving Global Scientific Collaboration

BY JOSE GUIMON, RAJNEESH NARULA
Issues in Science and Technology

COVID-19: Collaboration is the engine of global science – especially for developing countries



Singaporean scientists work on development of a coronavirus test kit. Image: Reuters/Edgar Su

World Economic Forum

Discussion Questions

- ▶ What are the lessons learned thus far?
- ▶ How can we as a global health community be better prepared for potential “Round 2” of this pandemic and/or future pandemics
 - Capacity building
 - “Health security”
 - Pandemics as issues of national security
 - Network of key stakeholders
 - Supply networks
 - Addressing health inequities

Coronavirus: A Stress Test That Has Revealed Key Weaknesses in the Healthcare System



Vectorstock.com

NPR

- ▶ Stress testing (sometimes called “*torture testing*”): thorough testing used to determine the stability of a given system; to evaluate *ability to withstand extreme conditions**
 - Weaknesses become more evident under stress and lead to failure
- ▶ Coronavirus has been one of the greatest stresses on the healthcare system and has brought to light key weaknesses
- ▶ A key weakness: underlying inequalities in health and wealth that existed and remained unaddressed prior to the pandemic
 - Members of underserved communities were already “living on the edge” and have thus suffered disproportionately from the system failures



Balocartoons.com

*Wikipedia, WhatIs.com

Minority Health Determines the Health of the Nation (CDC)

- ▶ Health disparities are “**preventable** differences in the burden of disease, injury, violence, or in opportunities to achieve optimal health that are experienced by socially disadvantaged racial, ethnic, and other population groups and communities.”
- ▶ Health disparities are **avoidable**
- ▶ Healthy equity is when “every person has the opportunity to attain his or her full health potential and no-one is disadvantaged from achieving this potential because of social position or other socially determined circumstances”

Johns Hopkins and CDC Describe Factors that Influence Racial and Ethnic Minority Group Health and have Led to COVID-19 Inequalities

- ▶ Covid-19 has hit the most vulnerable and disadvantaged populations the hardest
 - E.g., Black Americans represent only about 13% of the population in the states reporting racial/ethnic information; they account for about 34% of total Covid-19 deaths in those states

- ▶ Multiple interrelated causes:
 - Existing racial disparities in underlying medical conditions lead to higher risk of serious complications
 - Disparities highlight inequities in socioeconomic status, living conditions, and access to care
 - Many minority persons live in poverty, may rely on public transit, need to shop more, do not have health insurance or access to regular medical care
 - Social distancing may not be realistic; multigenerational households with limited space are common
 - Ethnic minorities more likely to be exposed to infection while working-overrepresented in essential jobs in transportation, government, healthcare, food supply services, and low wage or temporary jobs that may not allow telework or provide paid sick leave
 - Language or educational barriers may prevent understanding of best practices
 - Lack of access to internet and phone services places them at higher risk for being uninformed and unable to access telehealth services
 - Ethnic minorities are over-represented in jails, prisons, detention centers
 - Distrust in medical institutions puts communities at greater risk

<https://coronavirus.jhu.edu/data/racial-data-transparency>

<https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/racial-ethnic-minorities.html>

Coronavirus Has Not Been “The Great Equalizer”

Excess Deaths and Economic Impact in Underserved Populations Observed Worldwide

NBC News
CORONAVIRUS

Coronavirus Updates: In Poor Regions, Easing Lockdowns Brings New Risks

Many countries are easing their lockdowns before their outbreaks have peaked and before any detailed surveillance and testing system is in place to keep the virus under control

The Guardian

'Enormous disparities': coronavirus death rates expose Brazil's deep racial inequalities



NPR Chicago Tackles COVID-19 Disparities In Hard-Hit Black And Latino Neighborhoods

June 9, 2020 · 5:01 AM ET

CHERYL CORLEY



Residents of the Auburn Gresham neighborhood in Chicago line up for boxes of food at a weekly pop-up food pantry.

NPR
THE CORONAVIRUS CRISIS

Harvard Researchers Find 'Inequality On Top Of Inequality' In COVID-19 Deaths

May 22, 2020 · 6:41 PM ET

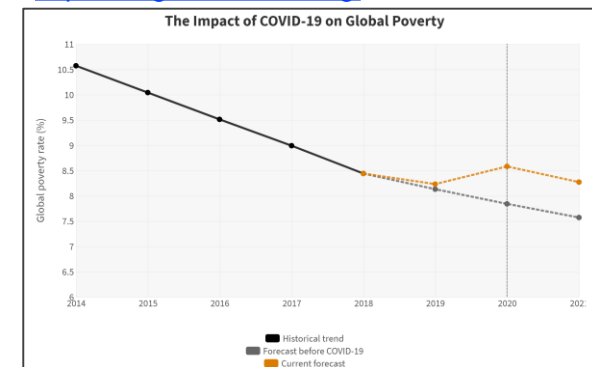


People wait in line to get food distributed by the National Guard in Chelsea, Mass., on April 16. Harvard researchers found areas with more poverty, people of color and crowded housing had higher mortality rates for the coronavirus.
Joseph Prezioso/AFP via Getty Images

Coronavirus Is a Devastating Blow to Children in Poverty

<https://www.savethechildren.org/>

<https://blogs.worldbank.org/>



New York Times

Millions Had Risen Out of Poverty. Coronavirus Is Pulling Them Back.

Experts say that for the first time since 1998, global poverty will increase. At least a half billion people could slip into destitution by the end of the year.

ECONOMY

Coronavirus Obliterated Best African-American Job Market on Record

The economic situation for black workers was fragile even before the downturn, which means recovery might be slower



WSJ

Worldwide Protests Directly Link Social Inequalities and Minority Health

New York City



New York Times

Philadelphia



The Guardian

Washington DC



Sky News

Chicago



AP

London



Vanity Fair

Paris



New York Post

Frankfurt



New York Post

Turin



New York Post

“The black community has been facing a pandemic that has taken the lives of their family and friends,” Dr. Smith said. “Then the community had to wake up to face the deaths of their people by the hands of those who were supposed to protect them. It’s a double whammy.” *New York Times*

How Do We Address Coronavirus-Related Health Disparities

- ▶ Ensure policies in place to provide wide access to vaccines and therapeutics to the most vulnerable populations, when available
- ▶ Long term-underlying global social inequalities MUST be addressed
 - Social and economic policy change
 - Access to affordable health care
 - Access to education
 - Access to affordable healthy food
 - Voting rights
- ▶ Work to increase trust of the healthcare system among racial and ethnic minorities
- ▶ Advocacy and partnerships



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