

NEMC Annual Meeting

***CITIZEN SCIENCE***

***in the Time of COVID-19***

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**Virtual Meeting**

**August 10, 2021**

# Citizen Science in the Time of COVID-19

## *Today's Discussion* : OUTLINE

Citizen Science : 101

COVID-19 Introduction - Refresher

Pandemic Impacts -- World Tour

Citizen Science & Health Impacts

Thoughts on Future

Q & A

# MIT Technology Review

JAN '89

Quoting from R. Kerson in a Wilson Center report :

***"The new form of engagement in science received the name "citizen science".***

Described how 225 volunteers across the US conducted citizen research in assisting the [Audubon Society](#) in an acid-rain awareness raising campaign. The volunteers collected rain samples, checked for acidity, and reported back to the organization. The information was then used to demonstrate the full extent of the phenomenon.

# DEFINITION

- **Citizen Science/Research** is defined as :

*“scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions“*

- The term *citizen science* entered the

[Oxford English Dictionary](#) (OED)

June 2014

# Citizen Research : Impacting Policy Makers

Citizen Science to support local leaders and decision-makers (in public and private sectors) in recognizing risks to public health and taking actions to :

- improve health
- reduce impacts (to health/environment)
- enhance our lives

Public Health in the Time of COVID-19

*COVID - 19*

# A Retrospect of *the* Pandemic :

(11/1925 AJPH, p 943)

*..... incomparably the worst catastrophe of the sort that has visited the human race since the Black Death of the Middle Ages. In modern times the ravages of neither the Asiatic cholera nor the bubonic plague can vie with those of influenza.*

*..... Judging by the past, nothing is more certain than that we shall some day have another visitation of this destructive infection. It is a commonplace that if it were to descend upon us tomorrow we, as public health workers and students of disease, should be little if at all better equipped to deal with it than we were 7 years ago.*

SARS – CoV - 2 :

Coronavirus Disease 2019

COVID - 19



# OUR PANDEMIC YEAR—A COVID-19 TIMELINE

On March 11, the WHO declared COVID-19 a pandemic. Here is a look back at a year in disruption.

## A MYSTERIOUS NEW ILLNESS

Images appear of Wuhan in lockdown, where officials attempt to contain a mysterious virus. Soon after, new cases and deaths related to (what's later named) COVID-19 surge in Europe.

## THE WORLD SHUTS DOWN

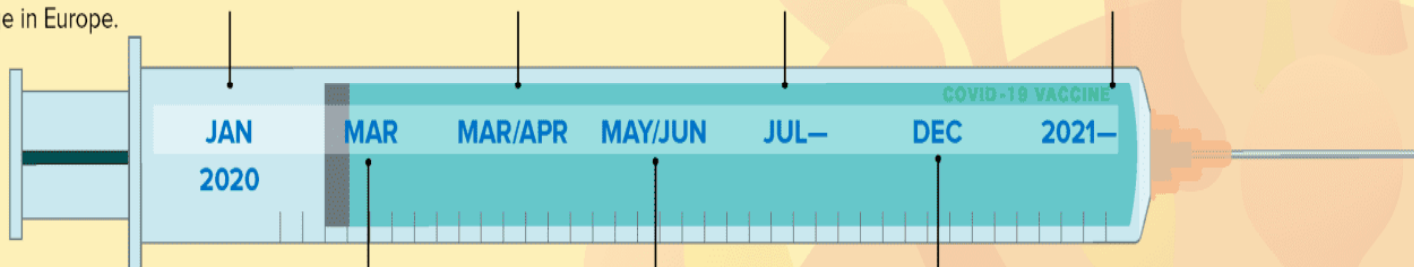
Countries seal borders; sports teams cancel seasons; schools close and employees go home. People start wearing masks and "social distancing."

## UPTICK IN MENTAL HEALTH ISSUES

People struggle as continued unemployment and/or working from home without childcare/school takes its toll. U.S. break records for daily cases/deaths.

## LIGHT AT THE END OF THE TUNNEL?

2021 begins with a race to vaccinate. Cases and deaths begin to fall. But the variants are still a threat, vaccine rollout is uneven, and we are still wearing masks.



## THE VIRUS SPREADS, CASES MULTIPLY

The Grand Princess cruise ship, docked outside of San Fran, has passengers with COVID-19; Bay Area is first in the U.S. to announce shelter-in-place orders; hospitals become overwhelmed as cases grow; there is a nationwide shortage of PPE.

## FLATTENING THE CURVE—FOR A WHILE

After "flattening the curve," cases begin to skyrocket again as states "reopen" in different phases. Researchers continue to race to identify treatments and make vaccines.

## NEW HOPE, NEW MUTATIONS

The FDA authorizes two vaccines. Major variants begin to circulate, some of which might impact the effectiveness of vaccines.

# RETROSPECT of THIS PANDEMIC

## 2019

12/31 -- WHO informed of a case cluster in Wuhan, China

## 2020

1/30 -- Declaration of *Public Health Emergency of International Concern* by WHO

1/31 -- Declaration of a Public Health Emergency in the US by DHHS

President implemented Robert T Stafford Disaster Relief and  
Emergency Assistance Act (FEMA)

3/11 -- Declaration of **Pandemic** by WHO

3/16 -- All 50 states had public health emergency declarations

# RETROSPECT of THIS PANDEMIC

**2020**

**World Response**

Russia, Brazil, Italy with Skyrocketing Numbers -- Early On

**US Response --**

Mixed Messages & Terrible Information

CDC **not** Having the Lead

Not Taking It Seriously

# RETROSPECT of THIS PANDEMIC

## 2020 - 21

First EPI Curve Peak - leveled with Nation-wide Closures (Shutdown)

Second Rise -- *Spring is in the Air* (Sturgis Rally, Beach/Pool Parties, Etc.)

Third Peak in the Epi Curve (Worst Month : Dec-Jan)

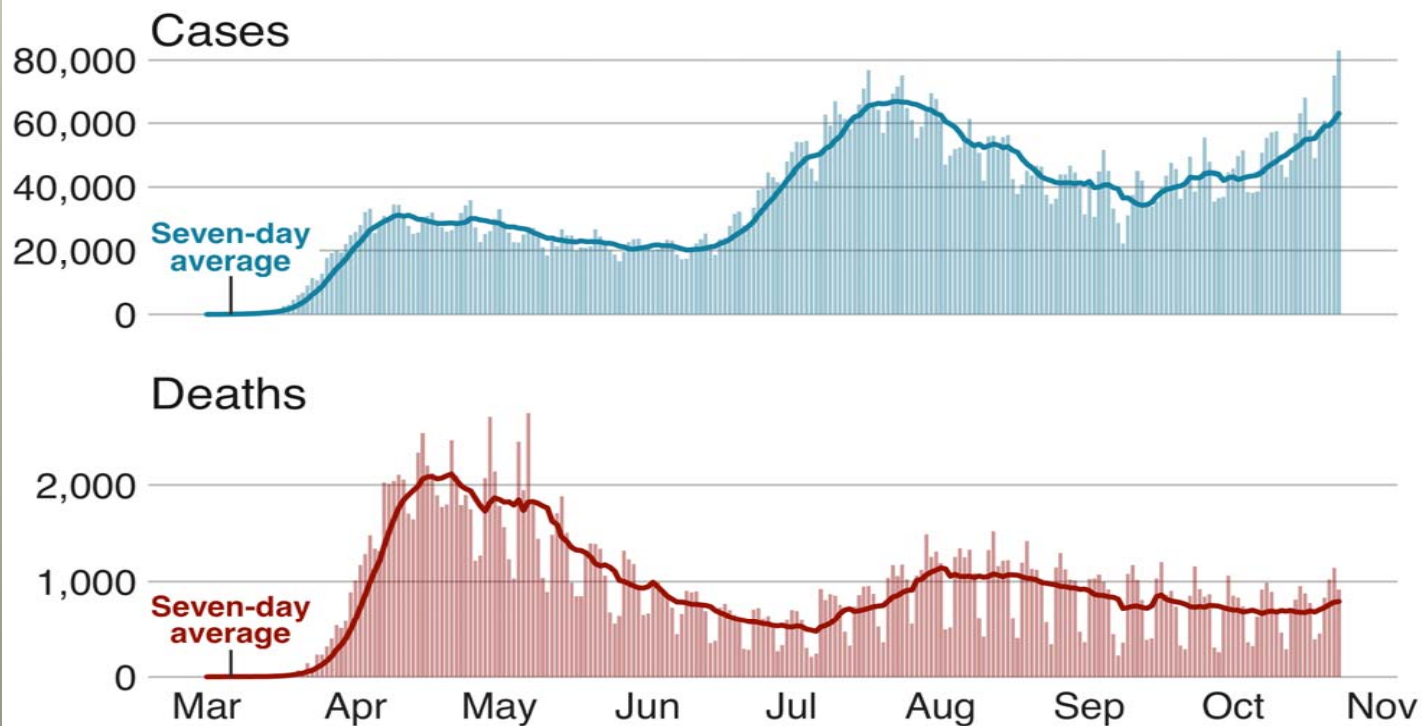
Variants

Vaccine

Resurgence --- Delta Variant

## Public Health in the Time of COVID-19

### Number of daily cases and deaths in the US



Source: COVID Tracking Project

BBC

# DATA for THIS PANDEMIC

**US:** Recent/wk :  
30 K New Cases  
.5 K Deaths

**TOTALS :**  
34.1 M Infected  
609 K Deaths (675K Spanish Flu)

**CHILDREN (5-17)**  
10-12% of US cases      2 M Ill      Over 200 Dead  
-- Higher Incidence in Middle/High School Aged, than Elementary  
-- Incidence Curve parallel to those of Adults

**COLLEGES (2000)**  
400 K Ill      90 Deaths (Most Were Faculty)

**LONG TERM CARE**  
30 % of All Deaths

**CDC 7/20/21**

# DATA for THIS PANDEMIC

## Virginia Demographics (Proximate)

### POPULATION :

70 %	White
20 %	Afro-American
10 %	Latino

### MORTALITY :

1 / 4	25%	Afro-American
1 / 1	11%	Latino

# The Cit Sci - COVID-19 *Nexus*

## -- *Preventing* Viral Transmission

- Sanitation      CLEANING, DISINFECTION, TEMPS
- Hand-washing
- Hygiene      SAFEGUARDS in COUGHING, SNEEZING
- Distancing for Health
- PPE      SAFETY MEASURES
- Isolation
- Education, *of course*

Also ----TESTING, MED EVAL, CONTACT-TRACING



# Citizen Science Concerns (Partial)

- Reduction in Volunteer Activity (Stream Sampling)
- Fewer Control Measures (Appalachian Trail Maintenance)
- Air Quality
- Water Quality
- Rain
- Health Education

*“During -- Pandemic”*

**Citizen Science  
&  
Health Agency Responses**

*Case Examples :*

Series of Interviews

National & International

***A 'Boots-on-the-Ground' View***

# Mitigation Actions

## Connecticut

- Bathing Areas : Water Quality Sampling
- Other Environmental Programs---cut back

# Mitigation Actions

## **Colorado**

- Re-Tasking activities of Staff
- Complaints — set up a dedicated Call Center
- Delivered PPE to Hospitals, Funeral Homes
- Contact Tracing
- The Department utilized—Incident Command

# Mitigation Actions

## Kentucky

- Governor did a lot of Outreach & Communicating
- Staff was pulled to assist other Agencies
- Some Virtual Inspections (few)
- Schools -- ½ Open, ½ Closed

# Mitigation Actions

## Philadelphia

- Staff Reductions -- fear/staying at home
- Complaints: Food Establishments, Rat issues
- Education: communicating Virus Risk to public
- Education: communicating Virus Risk to industry
- U-Tube Video 'on how to reopen' establishments

# Mitigation Actions

## Virginia

- Travel Restrictions
- Frequency of sampling/testing reduced
- Outright cancelling activities
- Re-assignments to Professional Staff



# Mitigation Actions

## Australia

- Closure of Food Establishments (early)
- Utilized a National Single-Point for Health Info & Had Clear and Consistent Messages across Nation
- Already had a 2<sup>nd</sup> Wave (current levels are low)

# Mitigation Actions

## Wales

- Staffing Issues (ill, or burn-out)
- Enforcement Areas : Checking on places to close
- Tanning Salons, Other small facilities
- Nuisances: Loud Noise Complaints
- Vector/Pest Infestations Increase

*“Future -- Pandemic”*

**Citizen Science**

# TECHNOLOGY

Remote Reach



Cell Phone Magic

# TECHNOLOGY

Working from Home ----- *LIVING AT WORK*



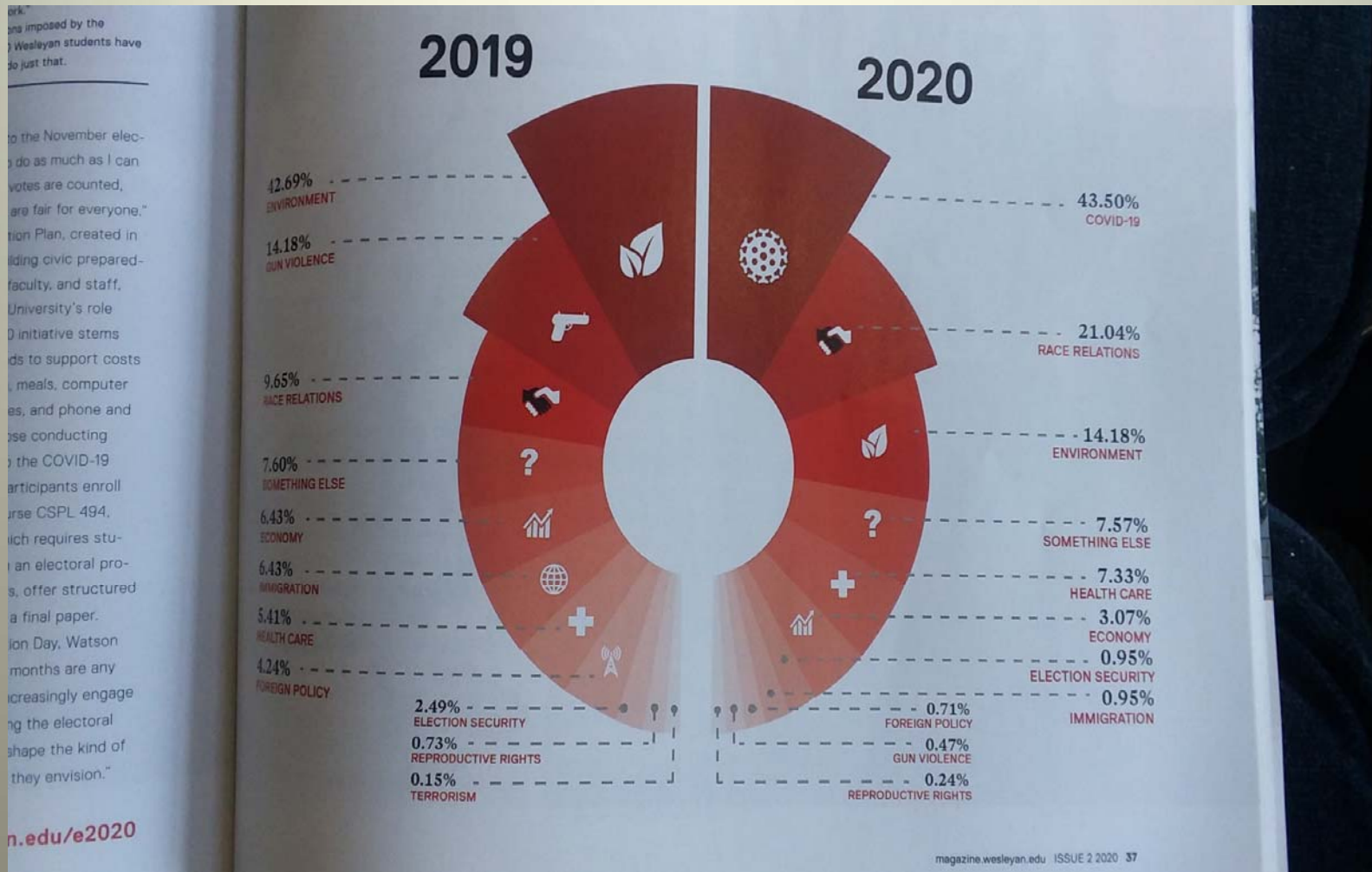
*Zoom* : an everyday word



Wrapping It Up

# COLLEGE STUDENT SURVEY

6/20



... imposed by the  
Wesleyan students have  
do just that.

... to the November elec-  
do as much as I can  
votes are counted,  
are fair for everyone."  
tion Plan, created in  
aiding civic prepared-  
faculty, and staff,  
University's role  
D initiative stems  
ds to support costs  
meals, computer  
es, and phone and  
se conducting  
to the COVID-19  
participants enroll  
urse CSPL 494,  
ich requires stu-  
an electoral pro-  
s, offer structured  
a final paper.  
ion Day, Watson  
months are any  
increasingly engage  
ng the electoral  
shape the kind of  
they envision."

n.edu/e2020

Adaptation

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Resiliency

2020

EARTH DAY -- 50<sup>th</sup>

YEAR OF SOUND





# EMERGING DISEASE (?)

## Current Variants

England	B.1.1.7
South Africa	B.1.351
Brazil - Japan	P.1

*Of Interest: the D614G mutation.....is shared by all 3*

# EMERGING DISEASE (?)

## Other Variants

California B.1.427/B.1.429

So B.1.351

Bra P.1

*CAL—viral loads in nasopharynx were 2X as high*

# EMERGING DISEASE (?)

UNC : SADS – CoV *(same family as SARS-CoV-2)*

Research Study following acute diarrhea virus  
in swine herds [China, since 2016].

Attacks gut, 90% mortality rate

2019 — looked at possibility of crossing species  
**(and confirmed)**



## *ACKNOWLEDGMENTS :*

- CDC and other Federal Agencies : data, reports, and research*
- Dr. J Patz and his Agency at University of Wisconsin*
  - WHO and their divisions, etc.*
  - AJPH, JEH and additional publications*
  - Internet Photos: Getty, Shutterstock, etc.*
- Additional Sources, Authors, and Researchers as noted*

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*Questions, Thoughts, Comments*

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