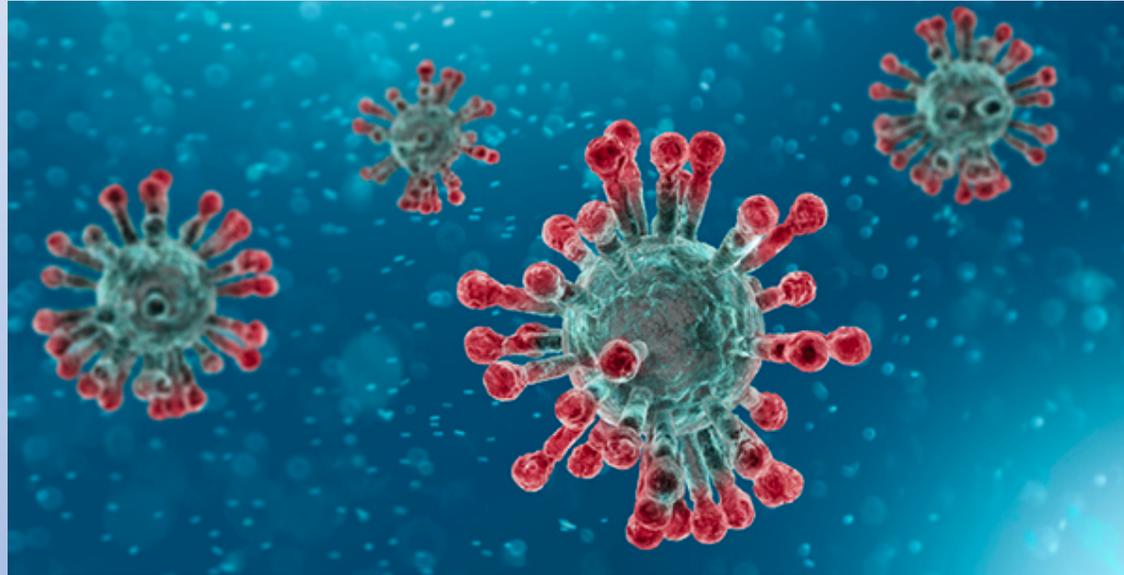


# COVID-19 in mid-Missouri (and how to get updated information)



**Albert L. Hsu, MD**

President-elect, Boone County Medical Society

26 August 2020

# Disclosures / Disclaimers

- Please understand that data is limited, preliminary, **constantly-evolving**.
  - Pandemics are difficult to model and predict.
  - Some “facts” stated just last month, may now already be out-of-date.
  - It’s important to be humble about what we know, and what we don’t know.
- **I AM NOT YOUR DOCTOR**.
  - Please see your primary care provider for any personal medical questions.
- Today’s town hall is a general informational session to first-year MU medical students.
  - I will direct you to official websites (like CDC) for public health recommendations.

# Outline

- (1) COVID-19: the Basics
- (2) Am I at Risk?
- (3) #FlattenTheCurve
- (4) Please don't be afraid to access medical care!
- (5) COVID-19 is Coming to mid-Missouri
- (6) Health Recommendations
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  - Antibody Testing
  - Health Disparities
  - Children
  - Pregnancy



# Outline

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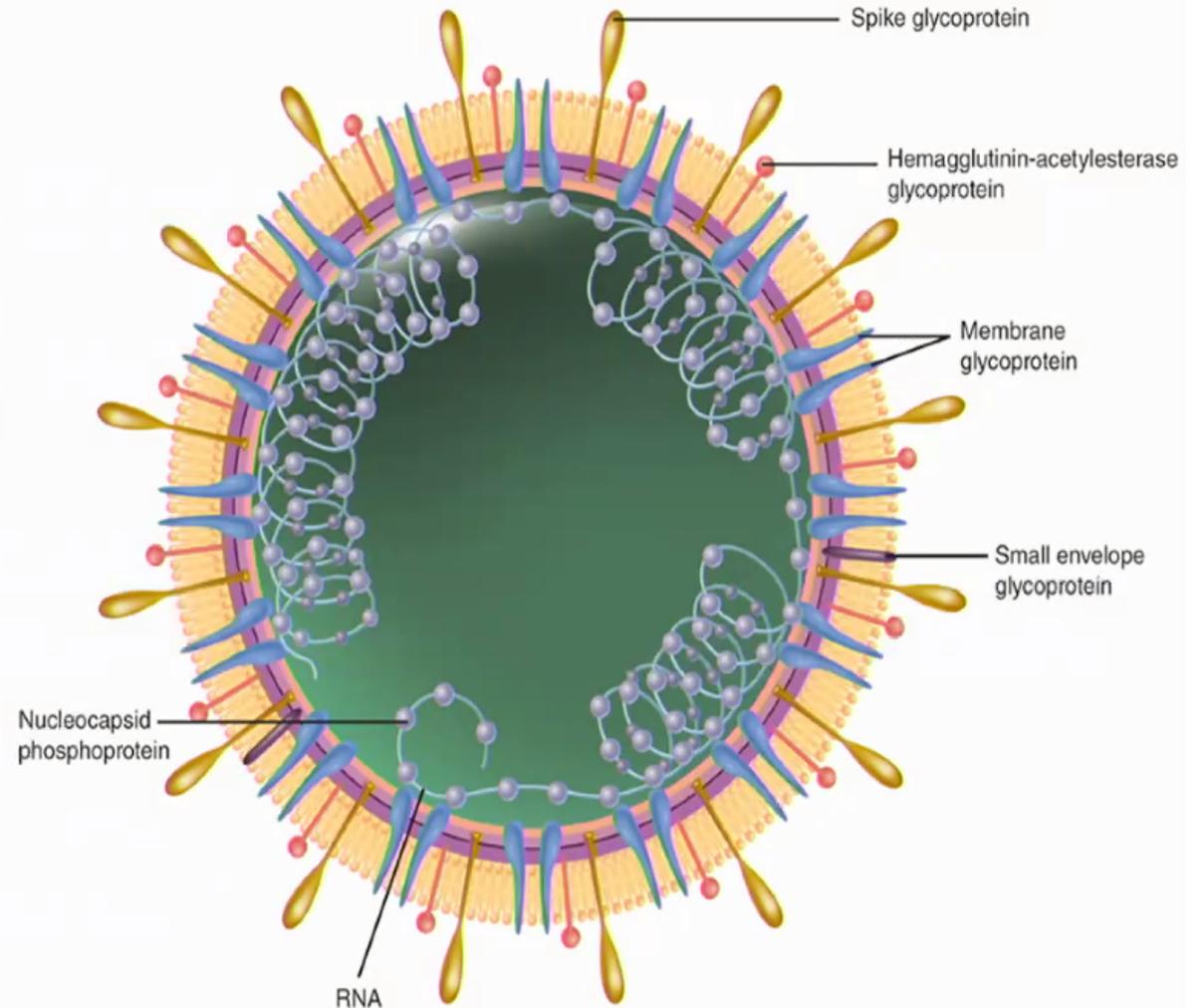


# Coronaviruses

Coronavirus particle is shown to contain a single-stranded, positive-sense RNA genome bound to a nucleoprotein (helical nucleocapsid) surrounded by a lipid bilayer envelope.

Petal- or club-shaped spikes (spike glycoprotein) project from the surface of the envelope giving the appearance of a solar corona.

There are several other surface proteins, including hemagglutinin-acetyesterase glycoprotein, membrane glycoprotein, and small envelope glycoprotein.



Source: Kenneth J. Ryan:  
Sherris Medical Microbiology, Seventh Edition  
Copyright © McGraw-Hill Education. All rights reserved.

# SARS-CoV-1

## 2002-2003



Often accused but never proven

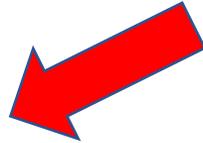
- Severe Acute Respiratory Syndrome

- First case was retrospectively recognized as having occurred in Nov 2002
- By July 2003, international spread of SARS-CoV resulted in 8098 SARS cases in 26 countries, with **774 deaths**
- WHO reported the last human chain of transmission, and that the epidemic had been broken on 5 July 2003
- The etiological agent, the SARS coronavirus (SARS-CoV) is believed to be an animal virus that crossed the species barrier, or changes in human behavior increased opportunities for human exposure to the virus. Virus adaptation enabled human-to-human transmission.

# SARS-CoV-2 causes COVID-19



- SARS-COV-2 is the virus that causes COVID-19 disease
- Symptoms:
  - Fever
  - Cough
  - Shortness of breath
- Warning signs
  - ***Trouble breathing***
  - ***Persistent pain or pressure in the chest***
  - ***New confusion or inability to arouse***
  - ***Bluish lips or face***



- From 3/19/20 webinar, Society for Maternal Fetal Medicine (high-risk Ob)

## CoVID-19: Signs & Symptoms

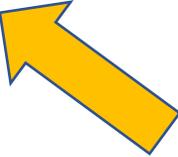
.....

• Fever	87.9%	• Myalgia/arthralgia	14.8%
• Dry cough	67.7%	• Chills	11.4%
• Fatigue	38.1%	• Nausea or vomiting	5.0%
• Sputum	33.4%	• Nasal congestion	4.8%
• SOB	18.6%	• Diarrhea	3.7%
• Sore throat	13.9%	• Hemoptysis	0.9%
• Headache	13.6%	• Conjunctival cong	0.8%



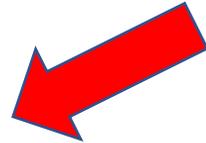
- From Fri 4/24/20 webinar, Medical Society of Virginia / VA Dept of Health:

## COVID-19 Symptoms

- Fever
  - Cough
  - Shortness of breath or difficulty breathing
  - Chills
  - Repeated shaking with chills
  - Muscle pain
  - Headache
  - Sore throat
  - New loss of taste or smell
- 

# COVID-19 symptoms (from the CDC, updated 8/23/20)

- People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness.
- Symptoms may appear **2-14 days after exposure to the virus**. People with these symptoms may have COVID-19:
  - **Fever or chills**
  - **Cough**
  - **Shortness of breath or difficulty breathing**
  - Fatigue
  - Muscle or body aches
  - Headache
  - New loss of taste or smell
  - Sore throat
  - Congestion or runny nose
  - Nausea or vomiting
  - Diarrhea
- This list does not include all possible symptoms. CDC will continue to update this list as we learn more about COVID-19.



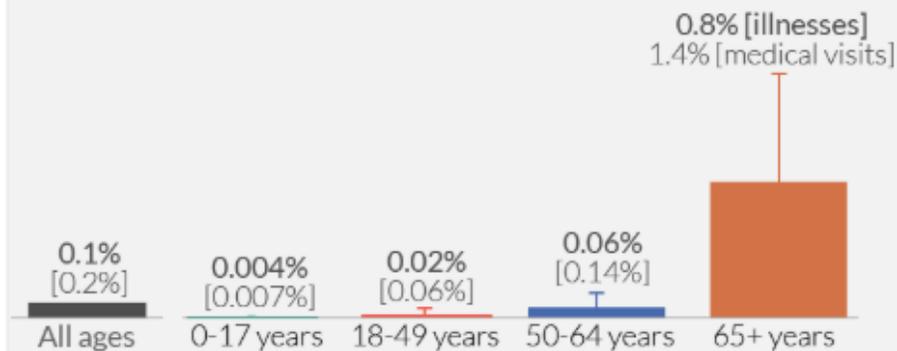
# Case fatality rates: COVID-19 vs. US Seasonal Flu

Case fatality rate (CFR) is specific to a location and time. It is calculated by dividing the total number of deaths from a disease by the number of confirmed cases.

## Seasonal Flu

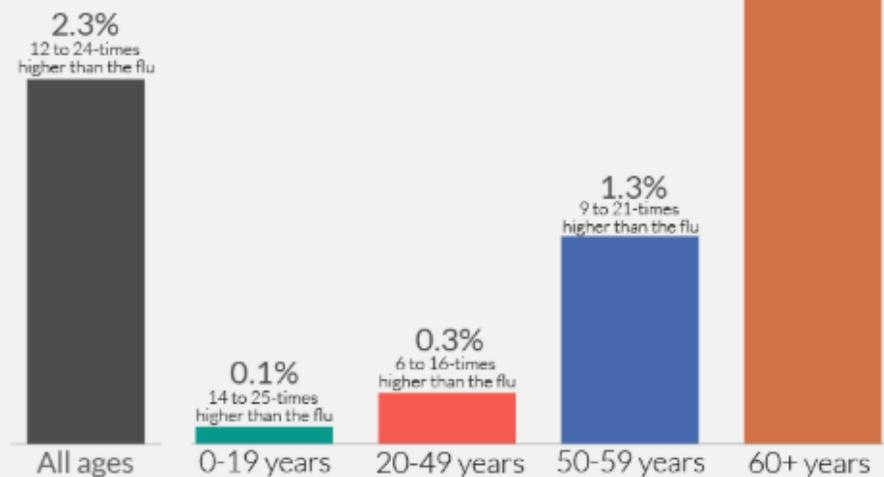
Case fatality rates for the influenza season 2018-19 in the USA.

Symptomatic cases are calculated based on models which aim to account for underreporting – figures based on medical visits are therefore also shown in square brackets, which may be a closer comparison to COVID-19 case fatality rates.



## COVID-19

Case fatality rates for the COVID-19 outbreak in China, for the period up to February 11, 2020.



Data: Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. *Vital surveillances: the epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020*. China CDC Weekly. US Influenza data is sourced from the US Centers for Disease Control and Prevention (CDC).

OurWorldinData.org – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors Hannah Ritchie and Max Roser.

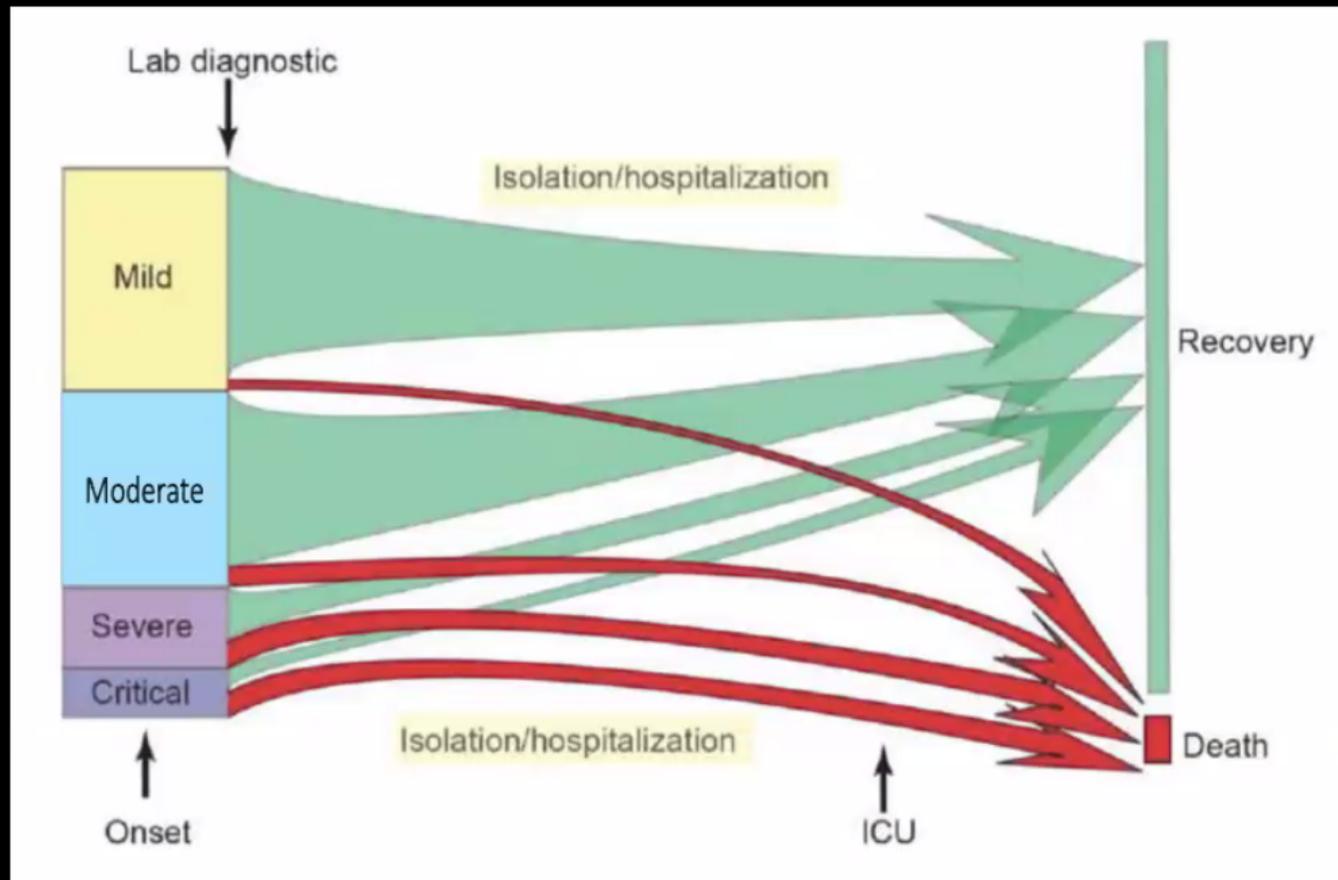
- From 3/19/20 webinar, Society for Maternal Fetal Medicine (high-risk Ob)



# CoVID-19: Progression of Disease

.....

Onset



Recovery

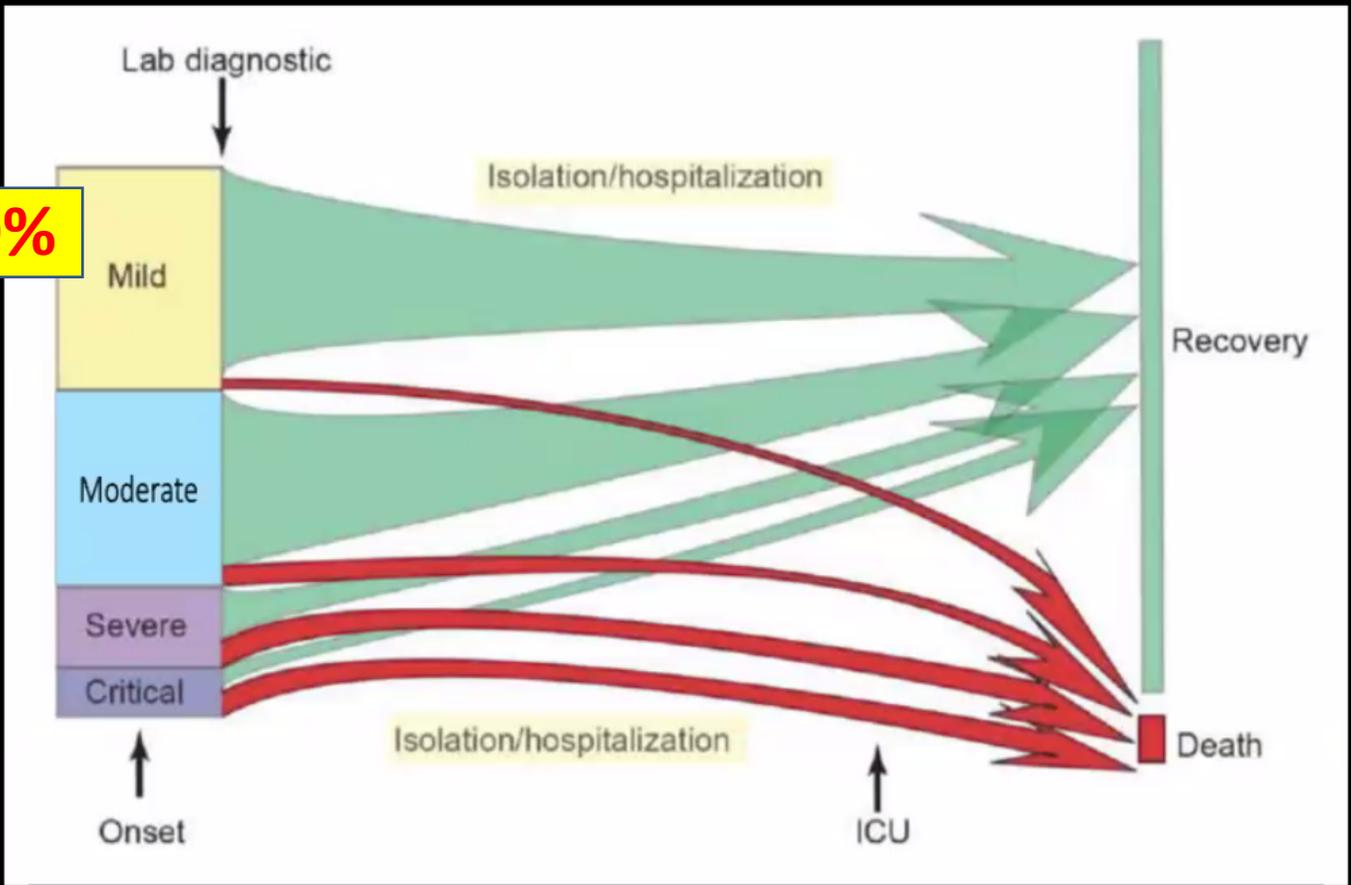


# CoVID-19: Progression of Disease

Recovery

Onset

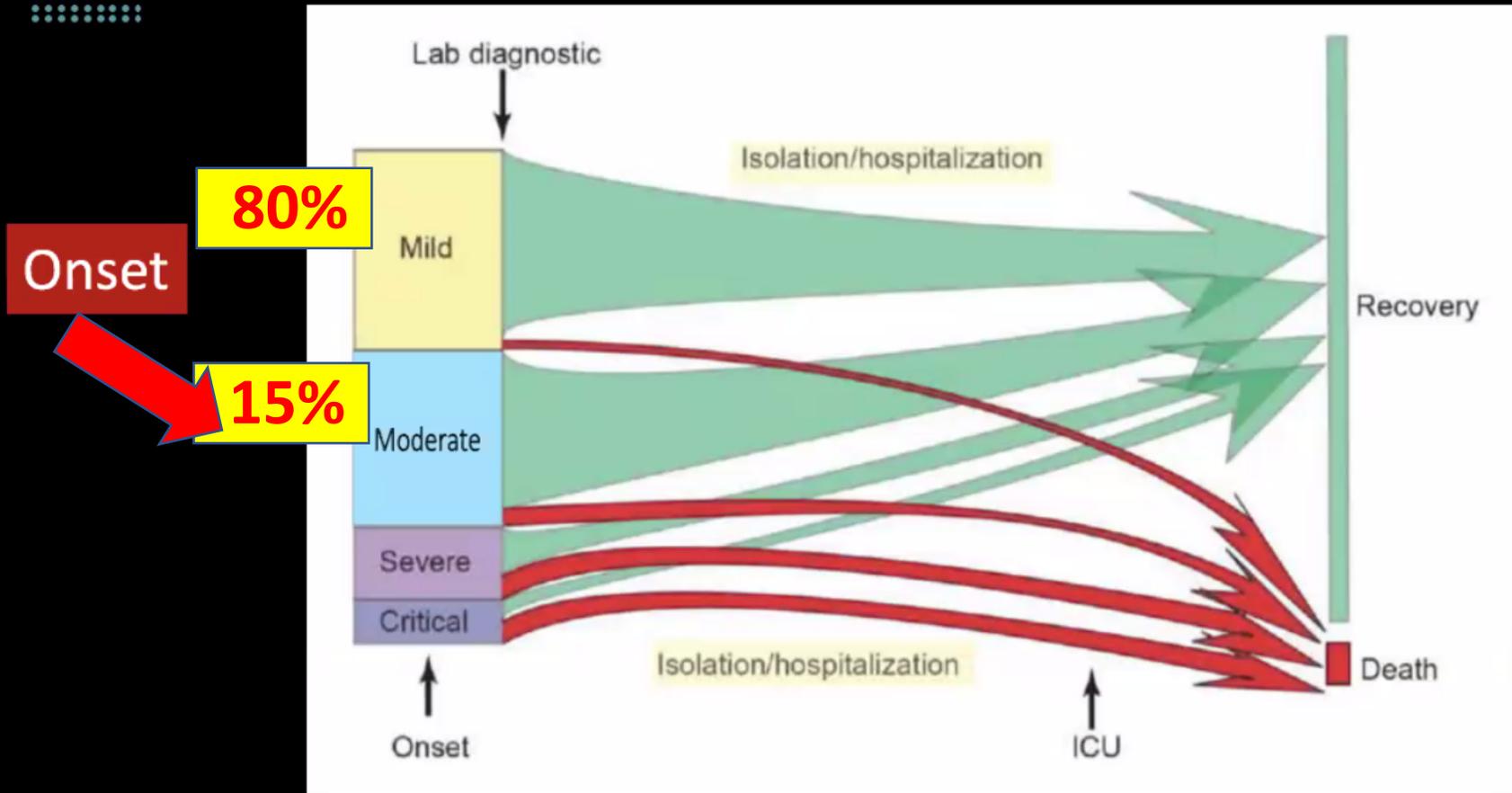
80%





# CoVID-19: Progression of Disease

.....

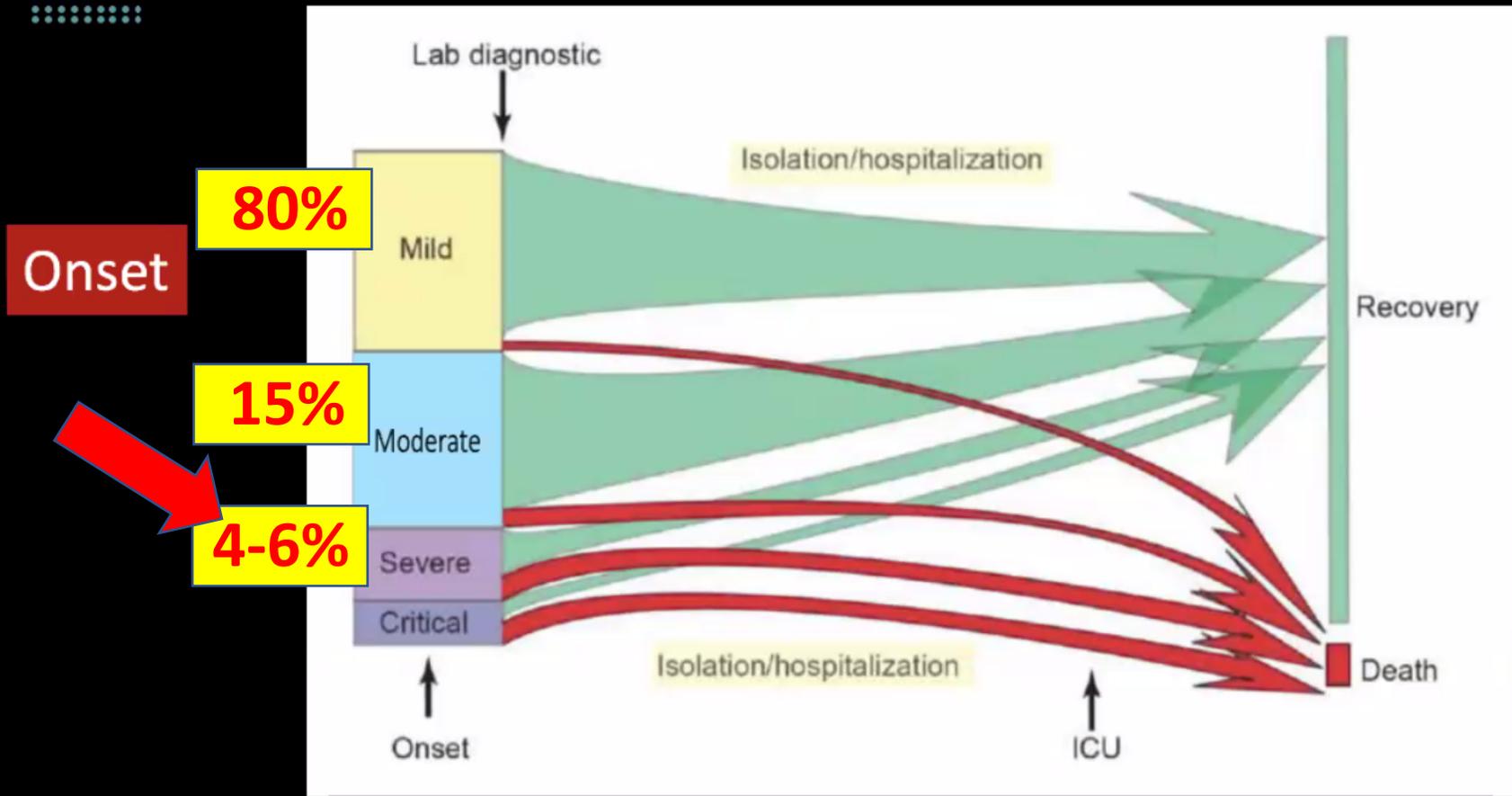


Recovery



# CoVID-19: Progression of Disease

.....

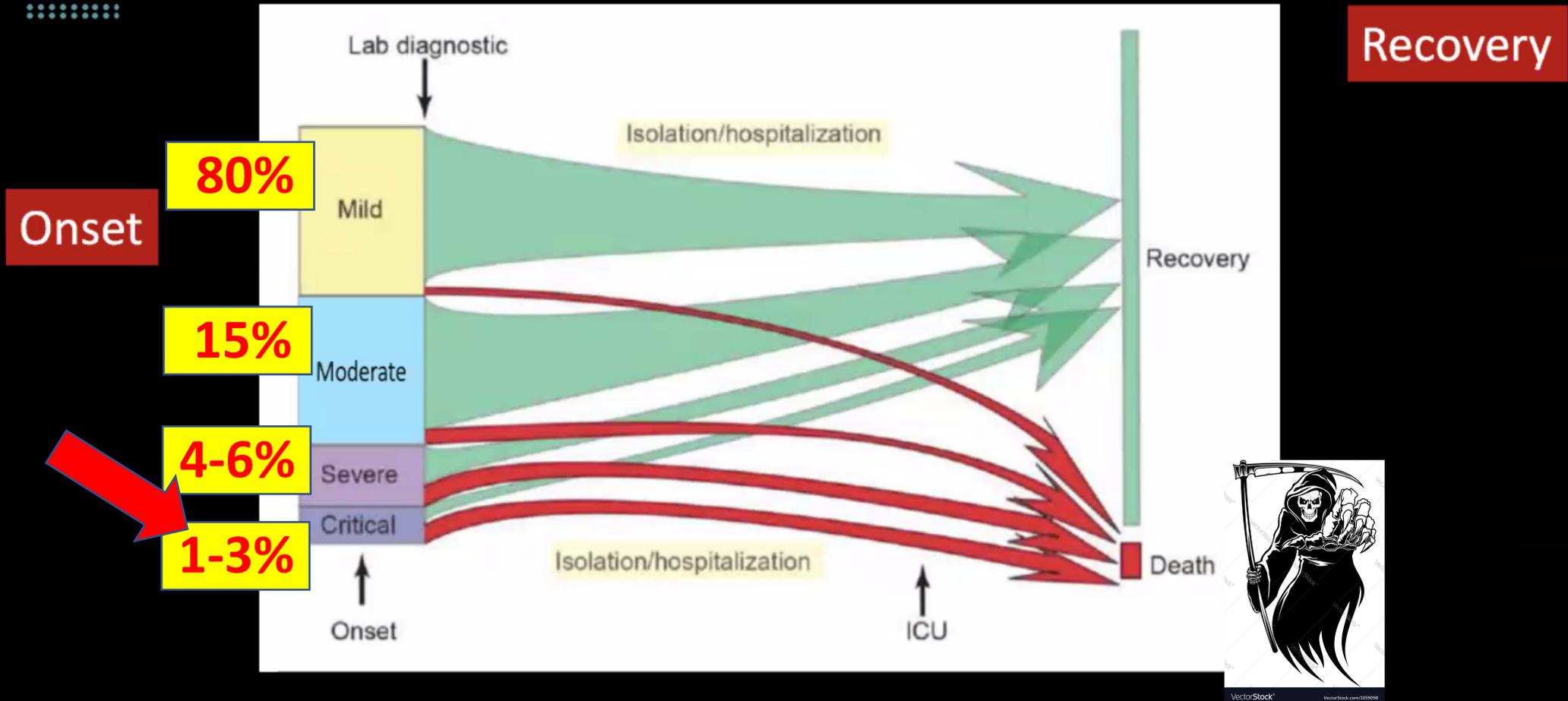


Recovery



# CoVID-19: Progression of Disease

.....



- From 3/19/20 webinar, Society for Maternal Fetal Medicine (high-risk Ob)

## CoVID-19: Case Fatality Rates

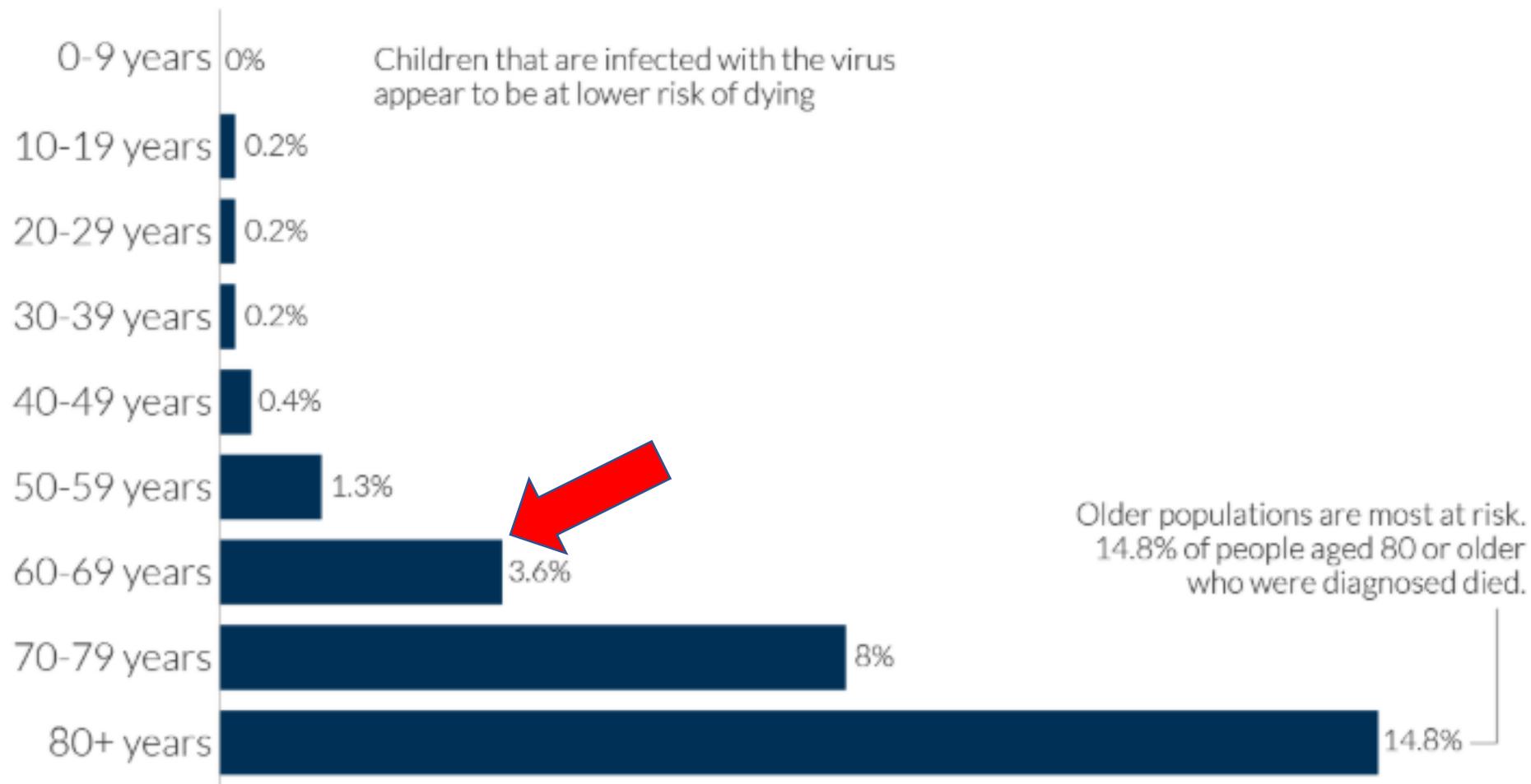
### EMERGING INFECTIOUS DISEASES®

- China (3.5%)
- China, excluding Hubei Province (0.8%)
- 82 countries, territories, and areas (4.2%)
- Cruise ship (0.6%)
- **Broad range of 0.25%–3.0%**



# Coronavirus: early-stage case fatality rates by age-group in China

Case fatality rate (CFR) is calculated by dividing the total number of deaths from a disease by the number of confirmed cases. Data is based on early-stage analysis of the COVID-19 outbreak in China in the period up to February 11, 2020.



Data source: Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. *Vital surveillances: the epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020*. China CDC Weekly.

OurWorldinData.org – Research and data to make progress against the world's largest problems.

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VectorStock.com/105008

Table. Case-Fatality Rate by Age Group in Italy and China<sup>a</sup>

	Italy as of March 17, 2020		China as of February 11, 2020	
	No. of deaths (% of total)	Case-fatality rate, % <sup>b</sup>	No. of deaths (% of total)	Case-fatality rate, % <sup>b</sup>
All	1625 (100)	7.2	1023 (100)	2.3
Age groups, y				
0-9	0	0	0	0
10-19	0	0	1 (0.1)	0.2
20-29	0	0	7 (0.7)	0.2
30-39	4 (0.3)	0.3	18 (1.8)	0.2
40-49	10 (0.6)	0.4	38 (3.7)	0.4
50-59	43 (2.7)	1.0	130 (12.7)	1.3
60-69	139 (8.6)	3.5	309 (30.2)	3.6
70-79	578 (35.6)	12.8	312 (30.5)	8.0
≥80	850 (52.3)	20.2	208 (20.3)	14.8



VectorStock.com/100909

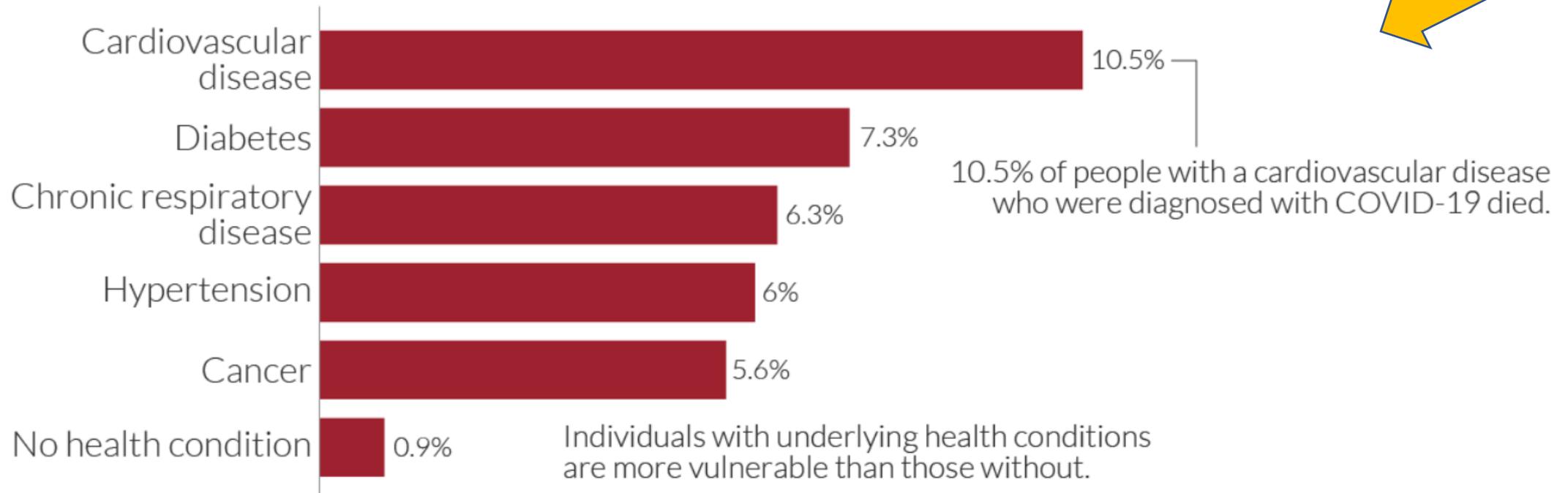
# People at higher risk for severe COVID-19 illness

(from the CDC, updated 7/1/20)

- *Older adults (8 in 10 deaths, in adults 65 years and older)*
- *People who live or work in a nursing home or long-term care facility*
- **Underlying medical conditions**
  - Chronic obstructive pulmonary disease
  - Type 2 diabetes mellitus
  - Serious heart conditions (heart failure, coronary artery disease)
  - Immunocompromise (weakened immune system) from organ transplant
  - Severe obesity (body mass index  $\geq 30$ )
  - Chronic kidney disease
  - Liver disease
  - Sickle cell disease
  - Asthma (moderate-to-severe)
  - Smoking
  - **Pregnancy**

# Coronavirus: early-stage case fatality rates by underlying health condition in China

Case fatality rate (CFR) is calculated by dividing the total number of deaths from a disease by the number of confirmed cases. Data is based on early-stage analysis of the COVID-19 outbreak in China in the period up to February 11, 2020.



Data source: Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. *Vital surveillances: the epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19)—China, 2020*. China CDC Weekly.

OurWorldinData.org – Research and data to make progress against the world's largest problems.

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# Summary

- 1.) For those panicked about COVID-19, people your age are unlikely to **die** from this.

# Outline

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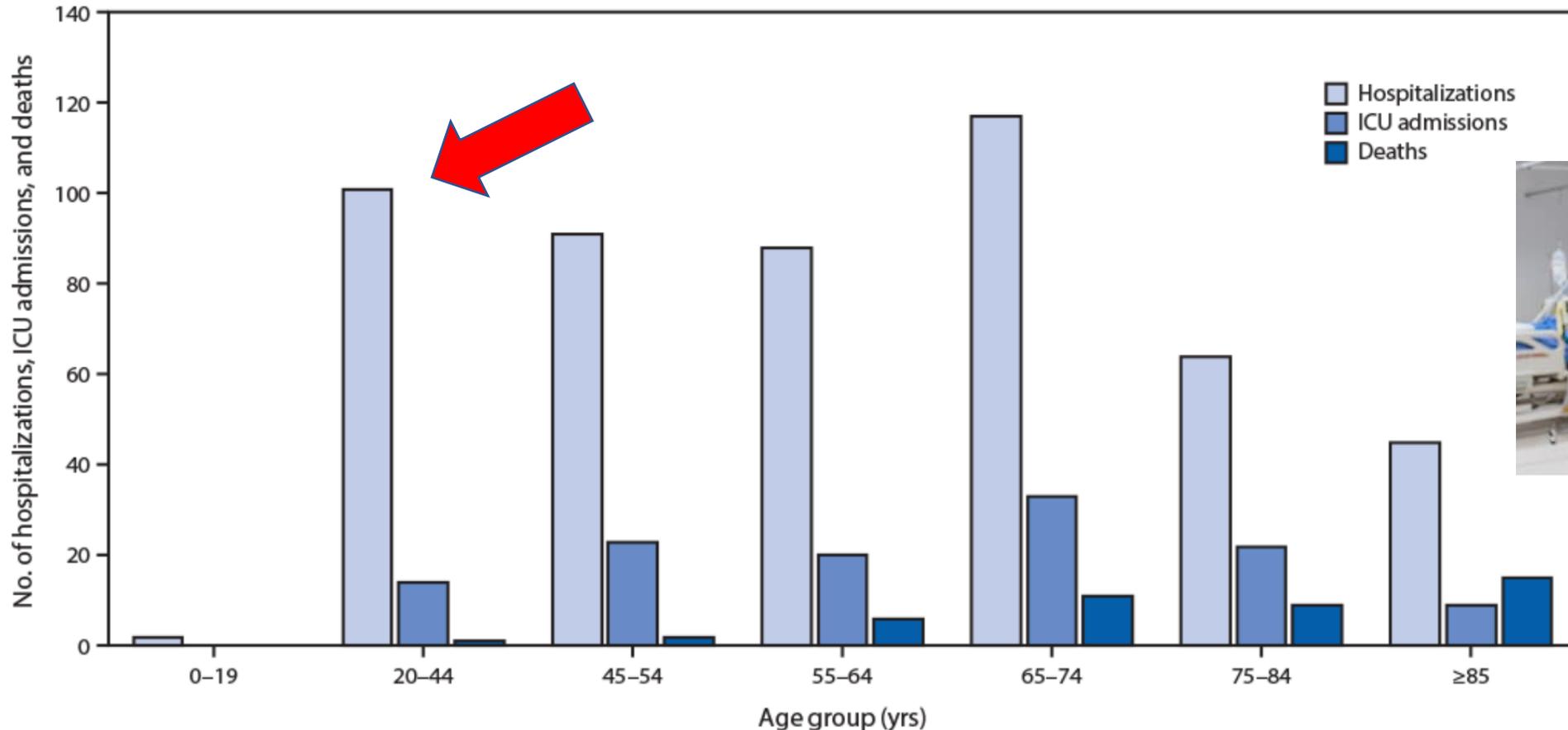


# Summary

- 1.) For those panicked about COVID-19, people your age are unlikely to **die** from this.
- 2.) *For those who think they don't need to worry about physical distancing (and masks) during this **worldwide pandemic**, please be aware that more and more unlucky younger folks are sometimes getting critically ill, and needing oxygen or even ICU care (!) from COVID-19.*

# But even if you're not at risk of death, you may be at some risk of critical illness....

**FIGURE 2. Coronavirus disease 2019 (COVID-19) hospitalizations,\* intensive care unit (ICU) admissions,† and deaths,§ by age group — United States, February 12– March 16, 2020**



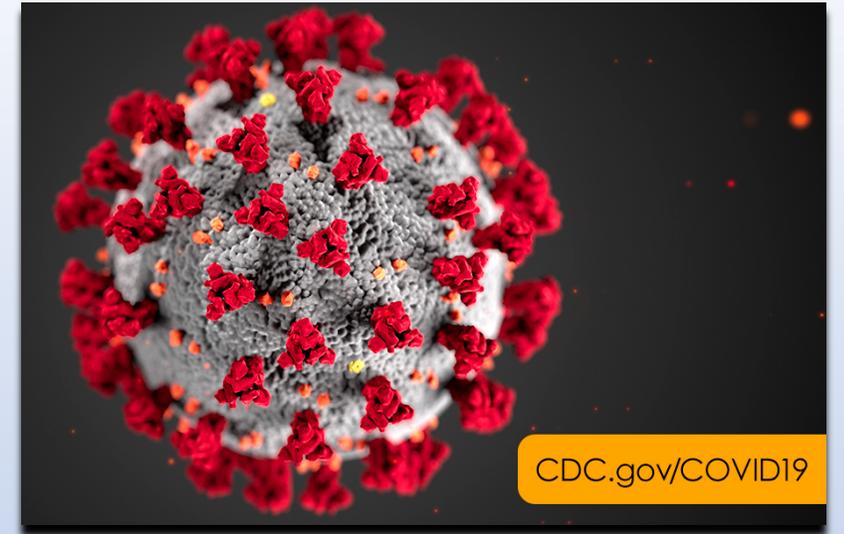
shutterstock.com • 1427561408

# What are your true COVID-19 risks (for 20-40 year-olds)?

- Risks of severe illness (low risk of mortality)
  - Risks of postviral sequelae
- Risk of transmission of COVID-19 to:
  - Elderly or immunocompromised family members
  - Pregnant friends and colleagues
- Risk of medical school converting (back) to an all-online format
  - Let's be clear: the Medical School Class of 2021 has been suffering:
    - Disrupted clinical rotations (surgery & family med clerkships w/ no patient exposure)
    - No "away" rotations
    - All-virtual interview season

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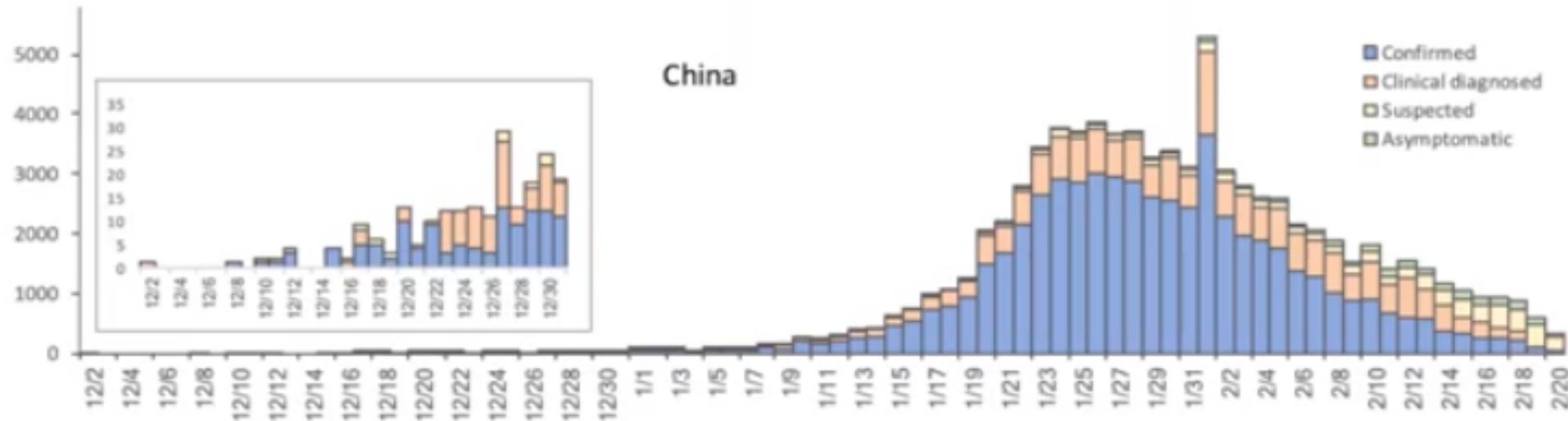
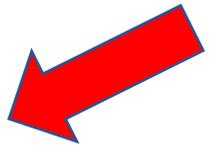


# Summary

- 1.) For those panicked about COVID-19, people your age are unlikely to **die** from this.
- 2.) For those who are nonchalant and overly complacent about this **worldwide pandemic**, please be aware that some unlucky younger folks are sometimes getting critically ill, and needing oxygen or even ICU-level care from COVID-19.
- **3.) We need to #FlattenTheCurve – and it's been going well so far**

- From Tue 3/10/20 webinar, Medical Society of Virginia:

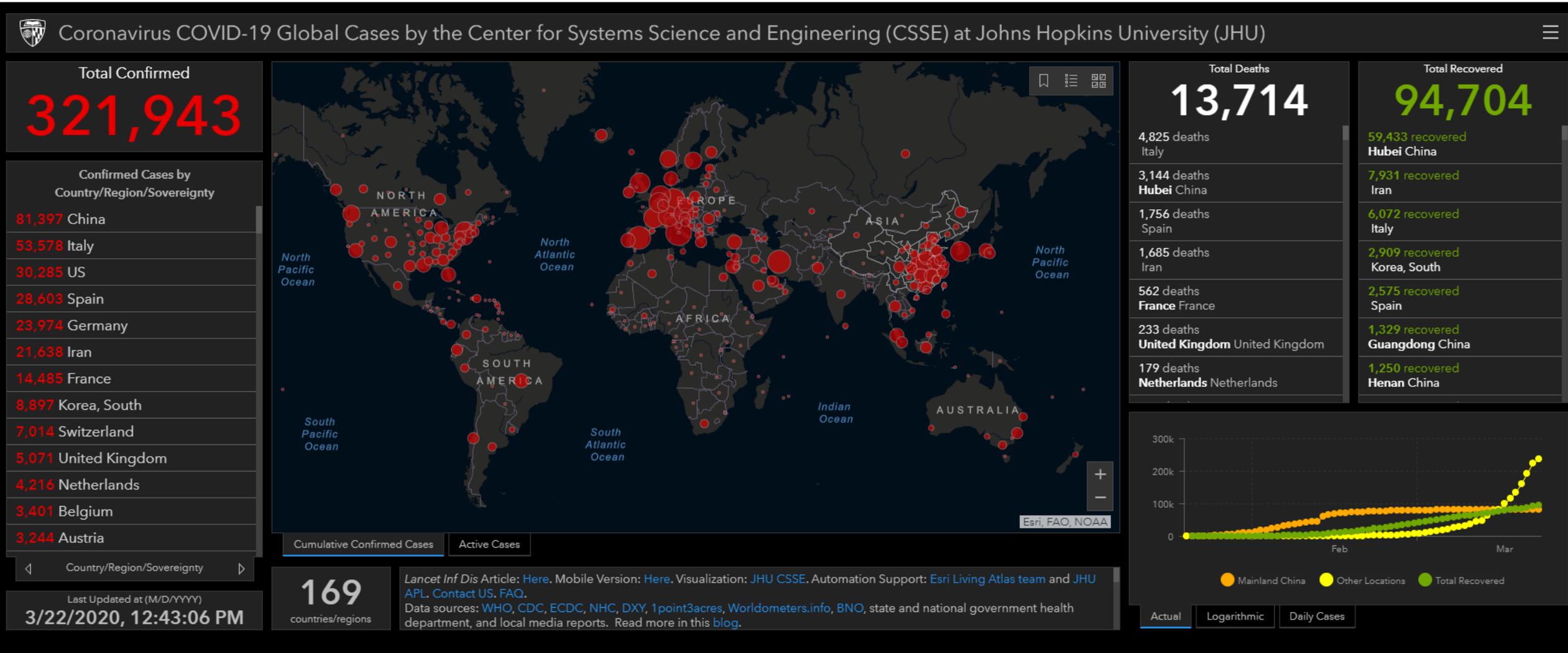
# Epidemic Curve of COVID-19 Cases in China



**Epidemic curve of COVID-19 cases reported in China by date of onset of illness, as of 20 February 2020**

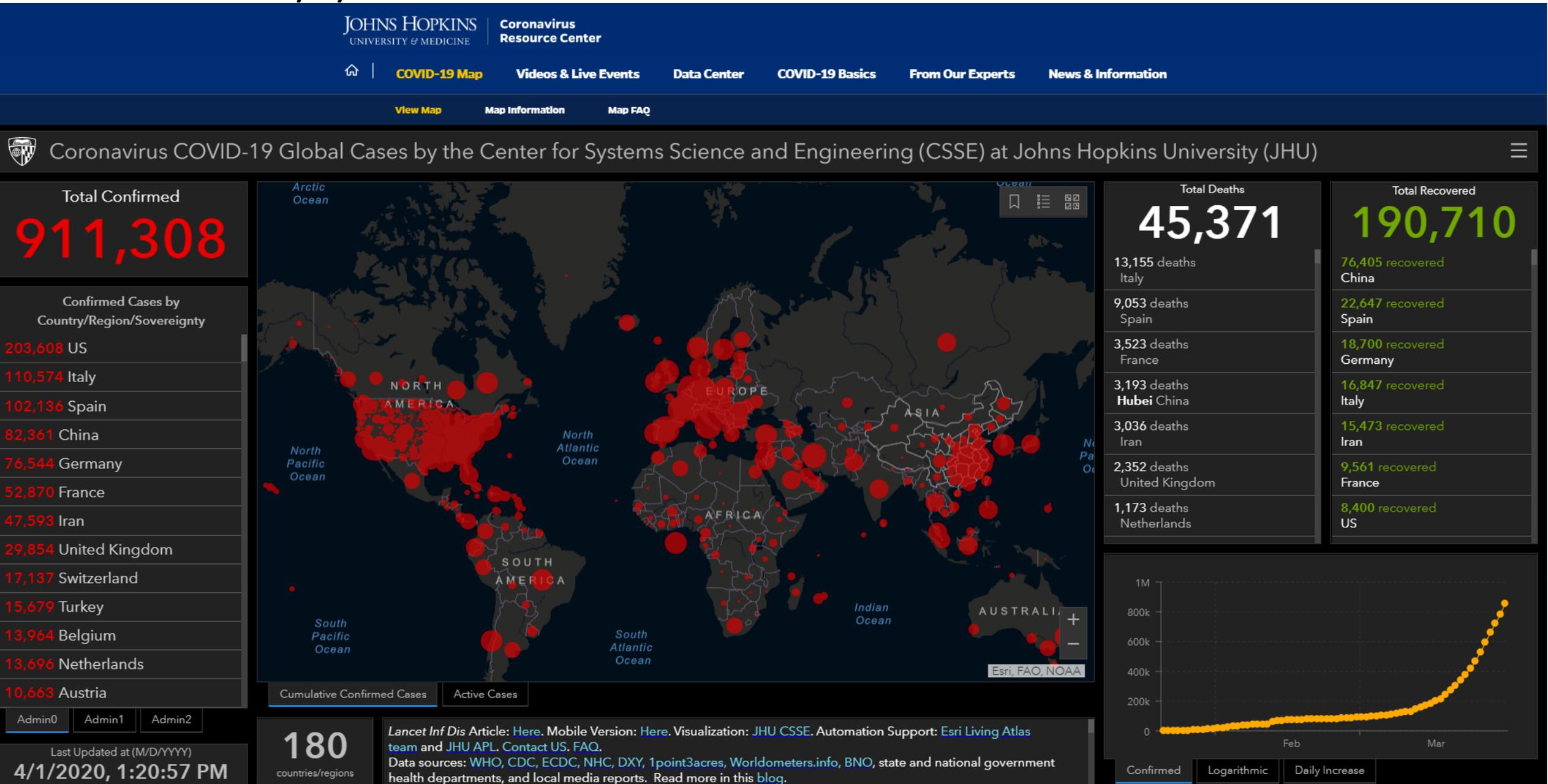
• As of Sun 3/22/20:

~4.3% "reported" death rate



• As of Wed 4/1/20:

~5.0% "reported" death rate



• As of Tue 8/25/20:

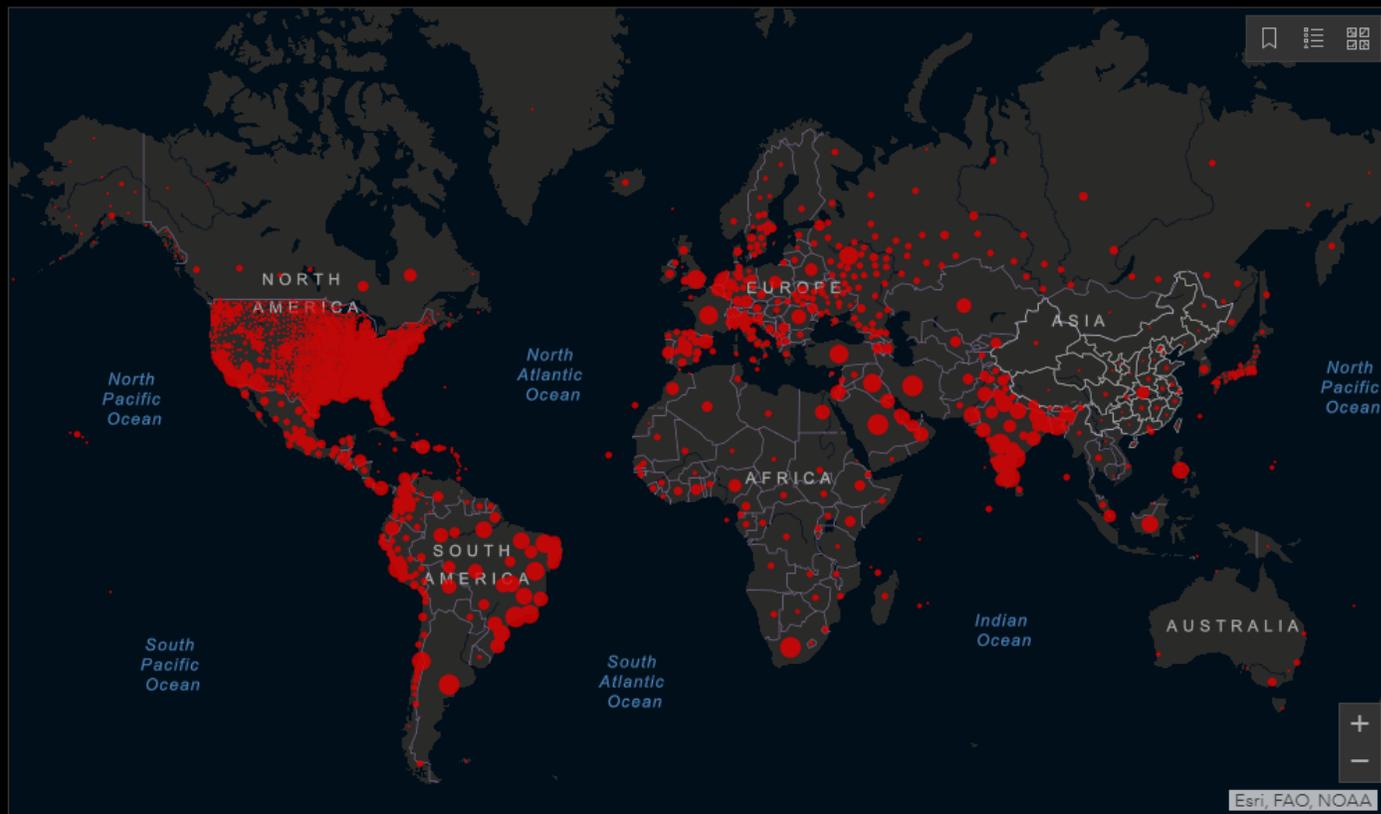
~3.43% "reported" death rate

Global Cases

23,750,184

Cases by Country/Region/Sovereignty

5,773,220 US
3,622,861 Brazil
3,167,323 India
963,655 Russia
613,017 South Africa
600,438 Peru
563,705 Mexico
551,688 Colombia
412,553 Spain
400,985 Chile
363,363 Iran
350,867 Argentina
329,821 United Kingdom
309,768 Saudi Arabia
299,628 Bangladesh



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

188  
countries/regions

Lancet Inf Dis Article: [Here](#). Mobile Version: [Here](#). Data sources: [Full list](#). Downloadable database: [GitHub](#), [Feature Layer](#). Lead by JHU CSSE. Technical Support: [Esri Living Atlas team](#) and [JHU APL](#). Financial Support: [JHU](#), [NSF](#), [Bloomberg Philanthropies](#) and [Stavros Niarchos Foundation](#). Resource support: [Slack](#), [Github](#) and [AWS](#). Click [here](#) to **donate** to the CSSE dashboard team, and other JHU COVID-19 Research Efforts. [FAQ](#). Read more in this [blog](#). [Contact US](#).

Global Deaths

815,745

178,326 deaths US
115,309 deaths Brazil
60,800 deaths Mexico
58,390 deaths India
41,535 deaths United Kingdom
35,445 deaths Italy
30,549 deaths France

Global Deaths

US State Level  
Deaths, Recovered

32,918 deaths, 74,731 recovered New York US
15,953 deaths, 33,646 recovered New Jersey US
12,303 deaths, recovered California US
11,911 deaths, 466,550 recovered Texas US
10,580 deaths, recovered Florida US
8,961 deaths, 102,205 recovered Massachusetts US
8,126 deaths, recovered Illinois US

US Deaths, Recovered

Last Updated at (M/D/YYYY)  
8/25/2020, 5:28:04 PM

Daily Cases

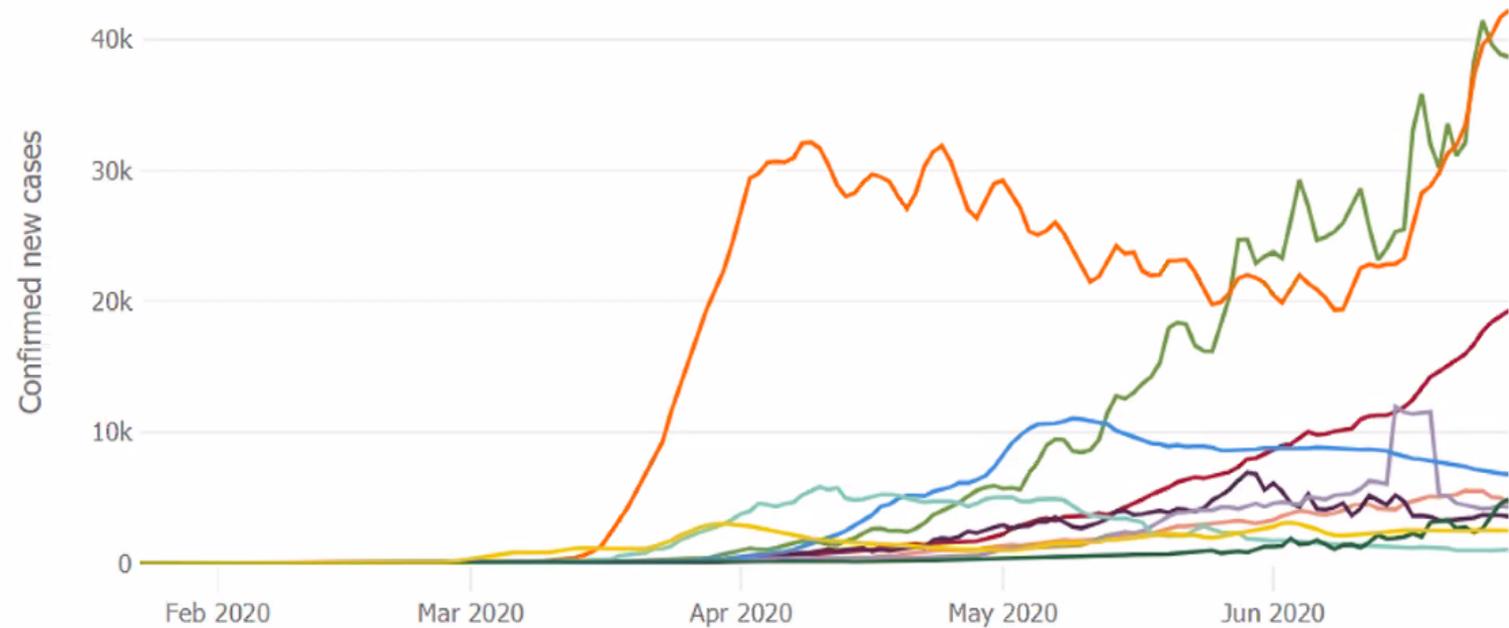
- From Tue 6/30/20 webinar, Boone County Medical Society (Dr. Nelson):

# World Updates

Johns Hopkins

## Daily confirmed new cases (5-day moving average)

Outbreak evolution for the current 10 most affected countries



Click any country below to hide/show from the graph:

Brazil  US  Mexico  India

- From Tue 6/30/20 webinar, Boone County Medical Society (Dr. Nelson):

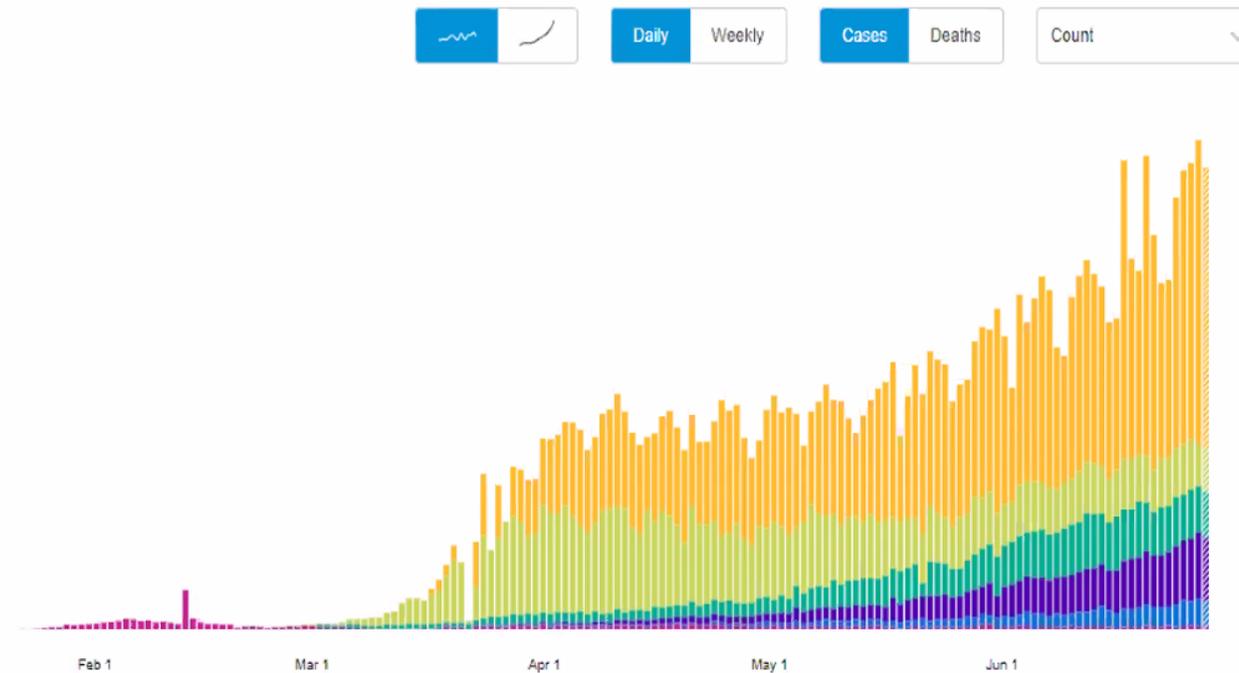
# World Updates

Case Numbers – WHO

## Situation by WHO Region

Americas	5,042,486 <small>confirmed</small>
Europe	2,673,131 <small>confirmed</small>
Eastern Mediterranean	1,041,774 <small>confirmed</small>
South-East Asia	760,816 <small>confirmed</small>
Africa	288,347 <small>confirmed</small>
Western Pacific	214,106 <small>confirmed</small>

Source: World Health Organization  
Data may be incomplete for the current day or week.



- From Tue 6/30/20 webinar, Boone County Medical Society (Dr. Nelson):

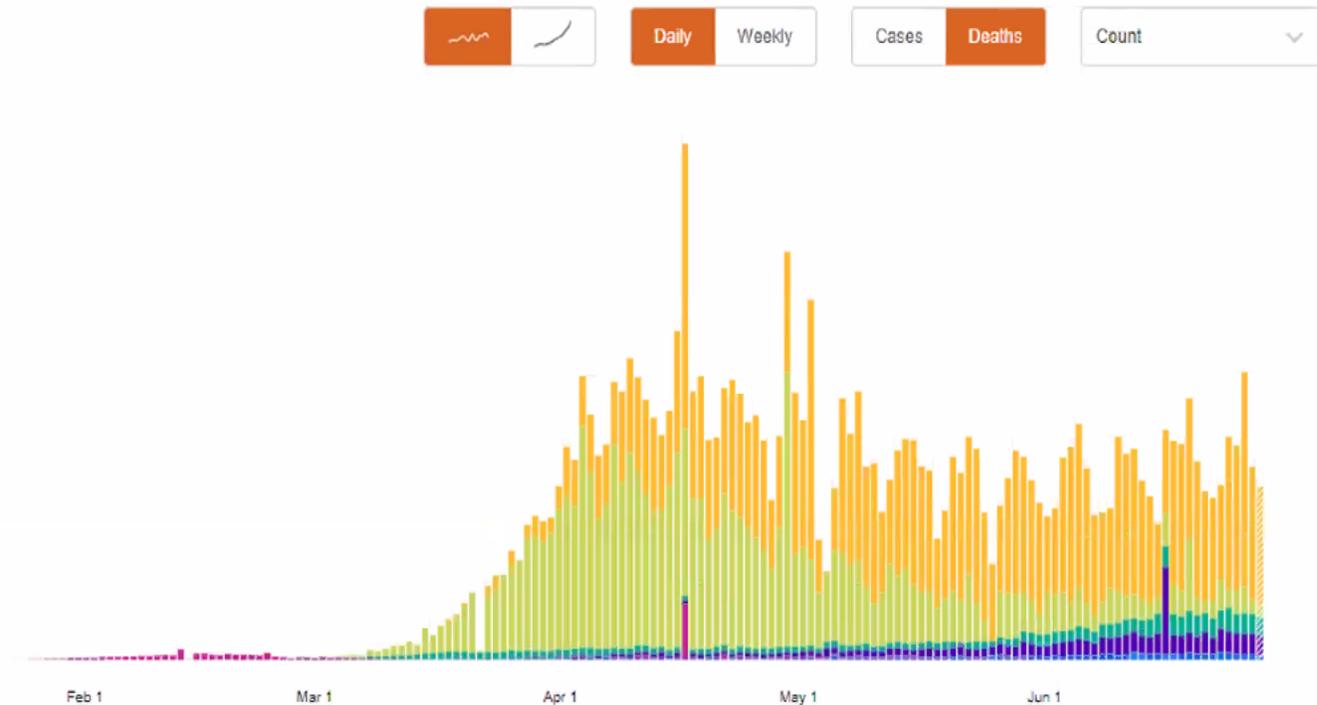
# World Updates

## Deaths – WHO

### Situation by WHO Region

Americas	244,791
Europe	196,835
Eastern Mediterranean	23,888
South-East Asia	21,078
Western Pacific	7,429
Africa	5,879

Source: World Health Organization  
Data may be incomplete for the current day or week.



- From Tue 6/30/20 webinar, Boone County Medical Society (Dr. Nelson):

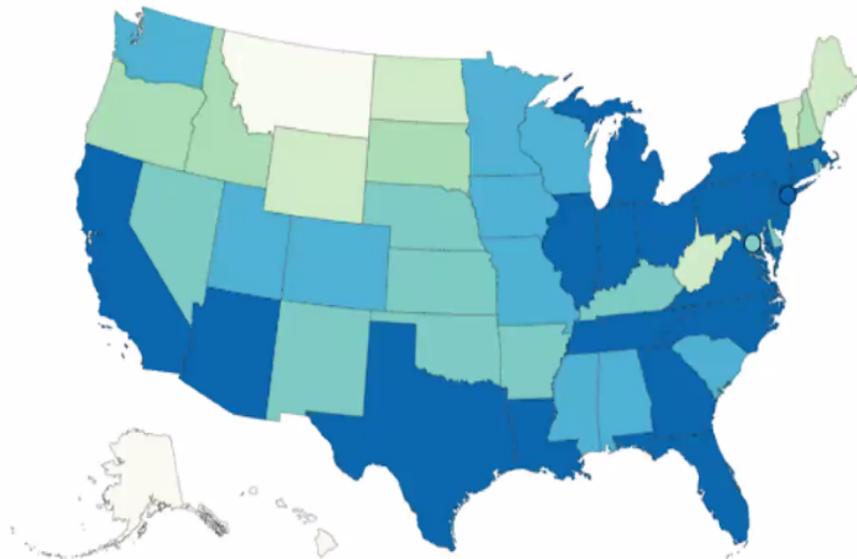
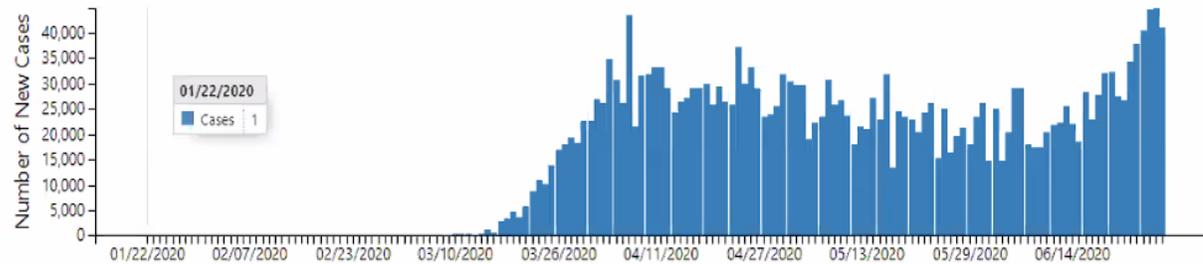


# U.S. Updates

CDC Data

## New Cases by Day

The following chart shows the number of new COVID-19 cases reported each day in the U.S. since the beginning of the outbreak. Hover over the bars to see the number of new cases by day.



## Reported Cases

- 0 to 1,000
- 1,001 to 5,000
- 5,001 to 10,000
- 10,001 to 20,000
- 20,001 to 40,000
- 40,001 or more

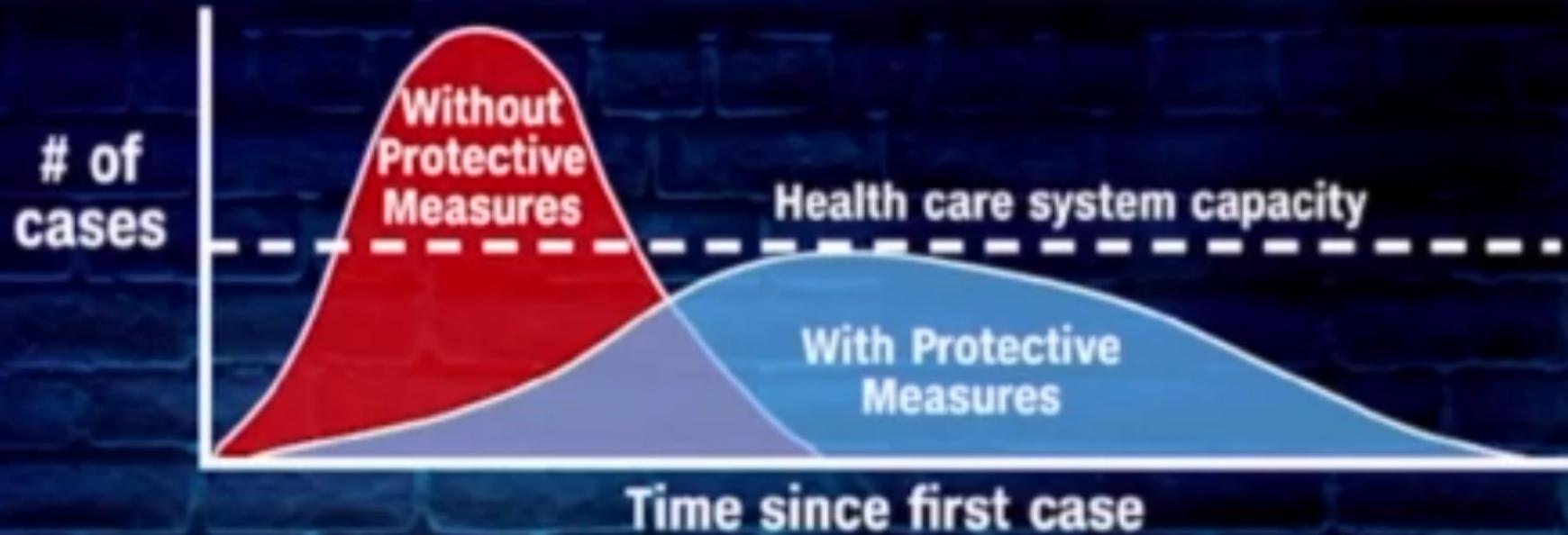
CASES AMONG HCP

87,606

DEATHS AMONG HCP

179

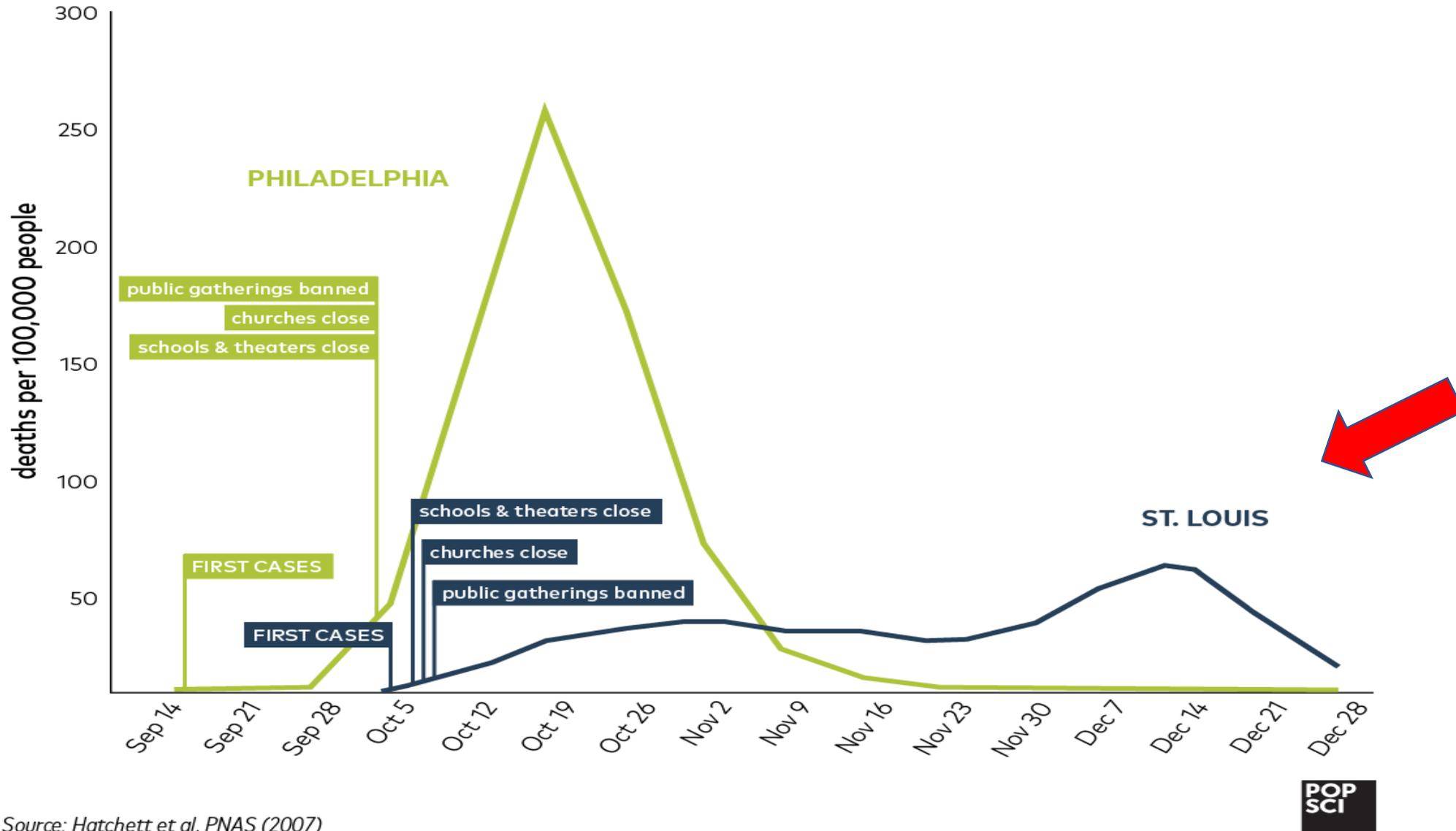
# FLATTENING THE CORONAVIRUS CURVE



Source: New York Times/CDC/The Economist

# Delaying preventative measures made the 1918 flu pandemic much worse for some cities

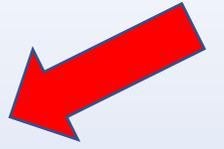
St. Louis managed to flatten their curve by implementing social distancing measures rapidly, whereas Philly decided to go ahead with a parade scheduled on September 28. Their pandemics turned out very differently.



Source: Hatchett et al, PNAS (2007)



# Summary

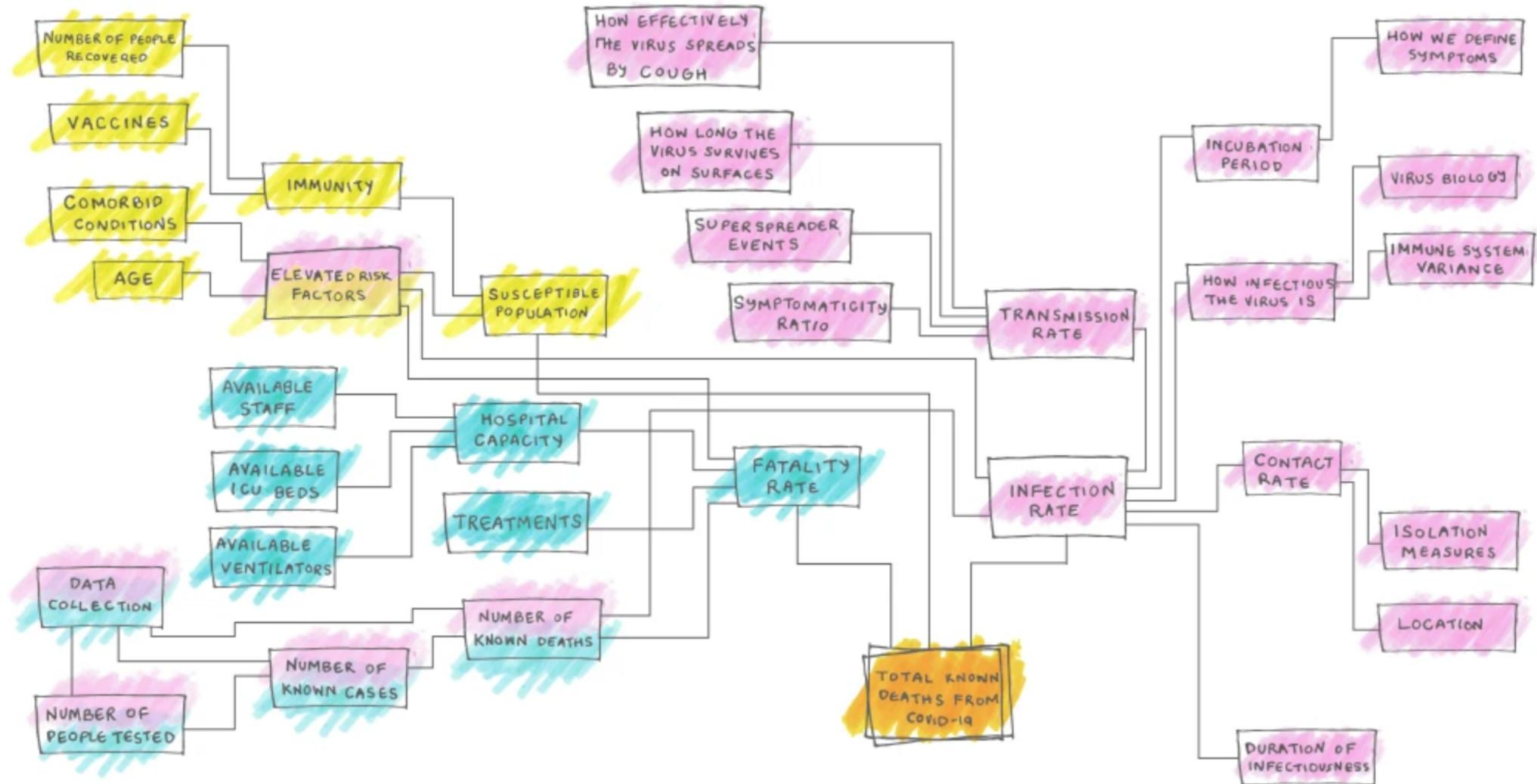


- 4.) For everyone, the main reason they had cancelled sports events, closing schools/churches, and encouraging social and physical distancing has been to #FlattenTheCurve, to protect the elderly \*and\* our healthcare workers (and our first responders!) on the front lines.
- Our nurses, doctors, and first responders have been out there protecting **us**.
- Let's please help protect **them** by slowing the spread.

# Flattening the Curve – has been going well

- Please understand that this data is limited, preliminary, and **constantly-evolving**.
  - Pandemics are difficult to model and predict.
  - Some “facts” stated just last week, may now already be out-of-date.
  - It’s important to be humble about what we know, and what we don’t know.

# “Why it’s so freaking hard to make a good COVID-19 model”



# • 8/23/20 “total deaths” projection for USA



United States of America



To see results within this country, select a subnational location

Total deaths

Daily deaths

Infections and testing

Hospital resource use

Mask use

Social distancing

## 309,918 COVID-19 deaths

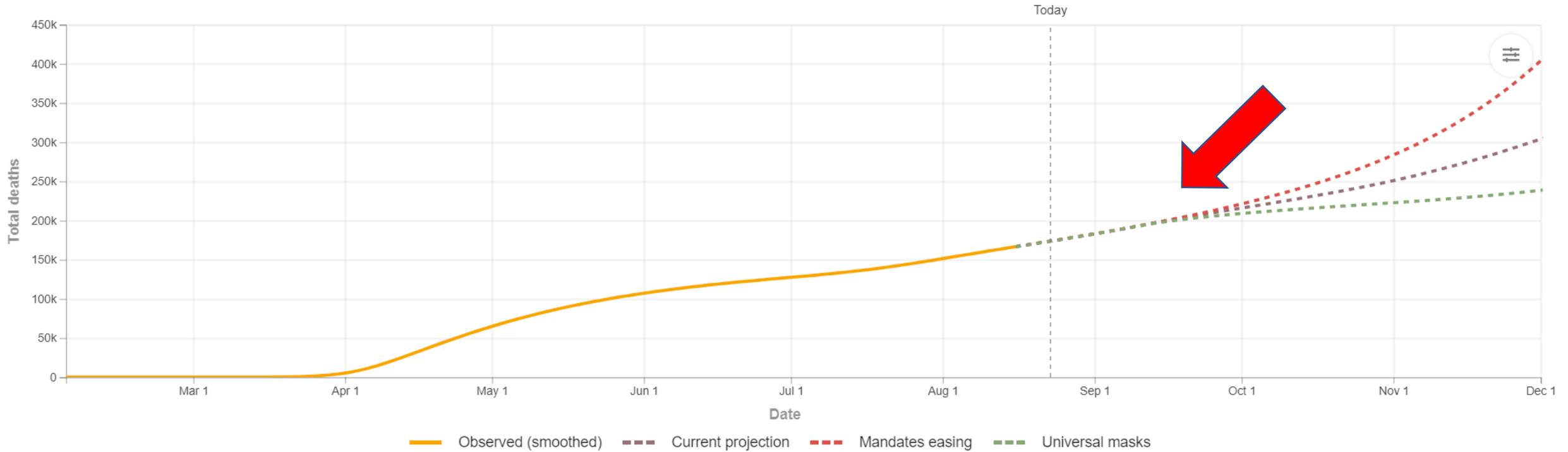
based on Current projection scenario by December 1, 2020

Scenario ⓘ

Projection ×

Easing ×

Masks ×



<https://covid19.healthdata.org/united-states-of-america/missouri>

All deaths specific to COVID-19 patients.

# • 8/23/20 “daily deaths” projection for USA

United States of America

To see results within this country, select a subnational location

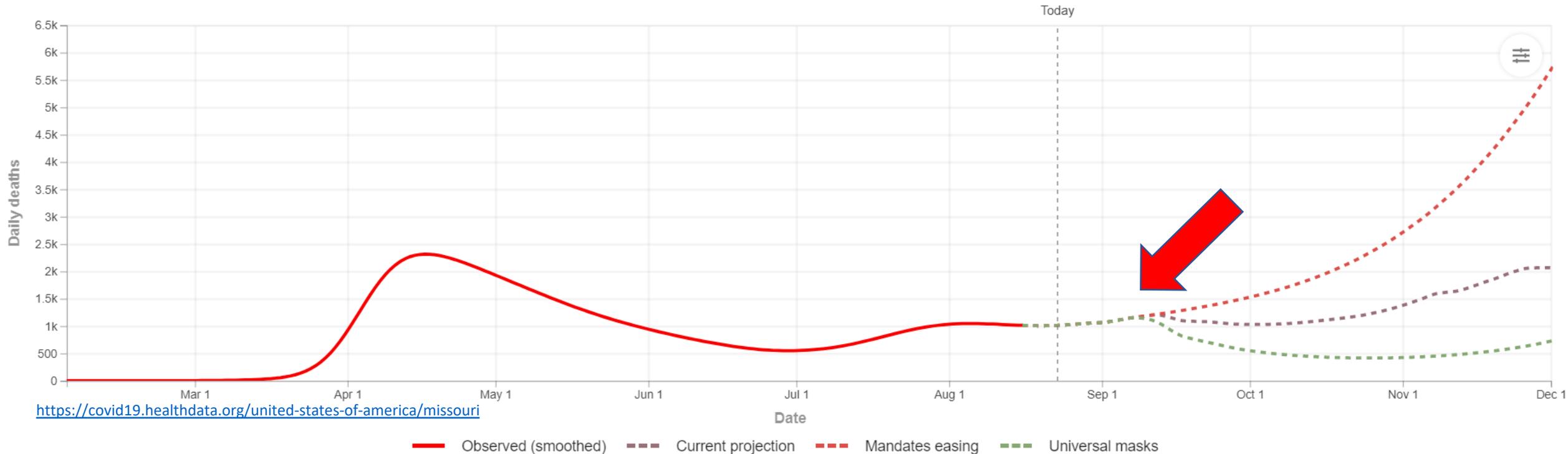
Total deaths **Daily deaths** Infections and testing Hospital resource use Mask use Social distancing

Trend Compare Map

## Daily deaths

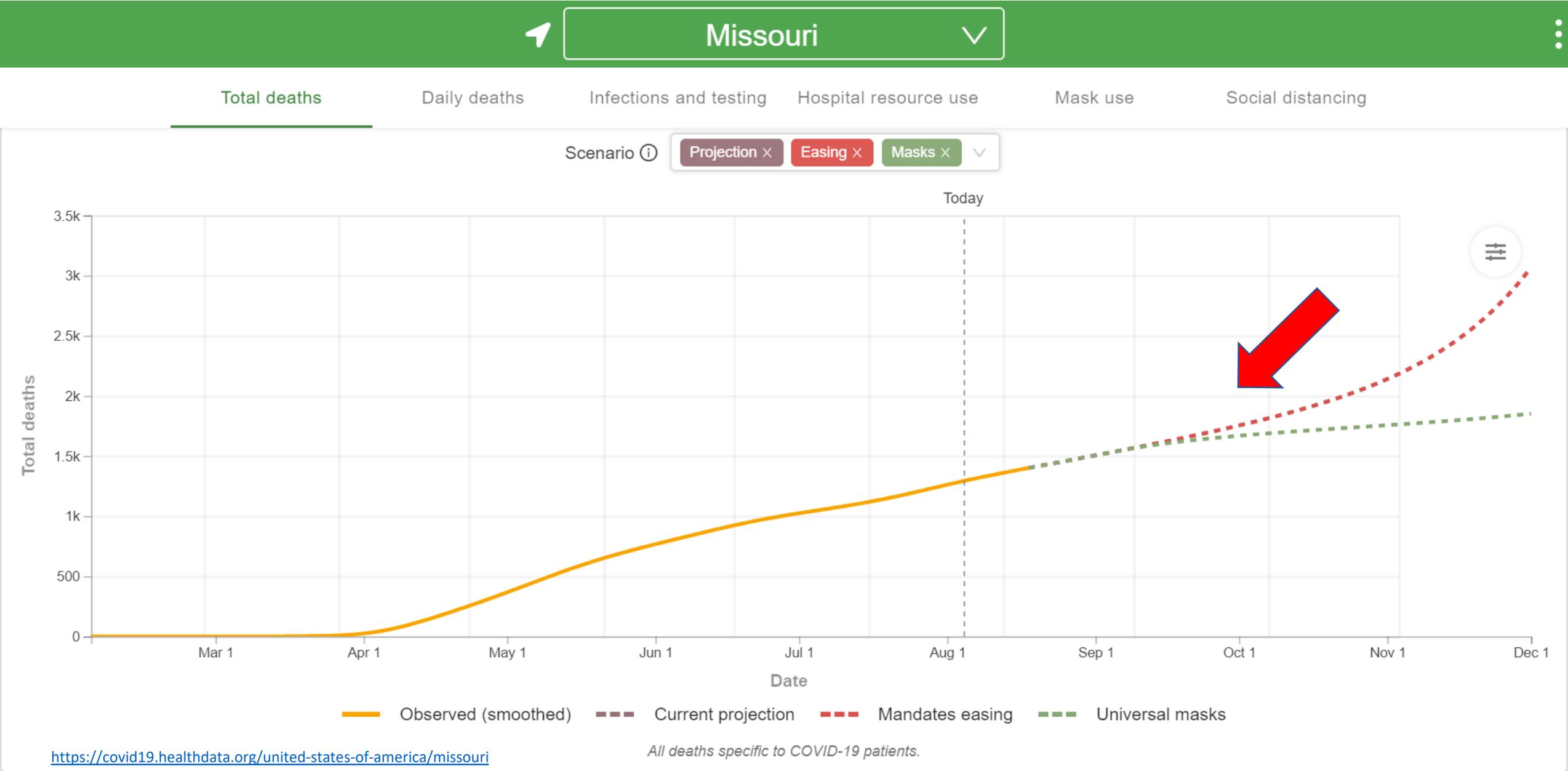
Daily deaths is the best indicator of the progression of the pandemic, although there is generally a 17-21 day lag between infection and deaths.

Scenario  Projection  Easing  Masks

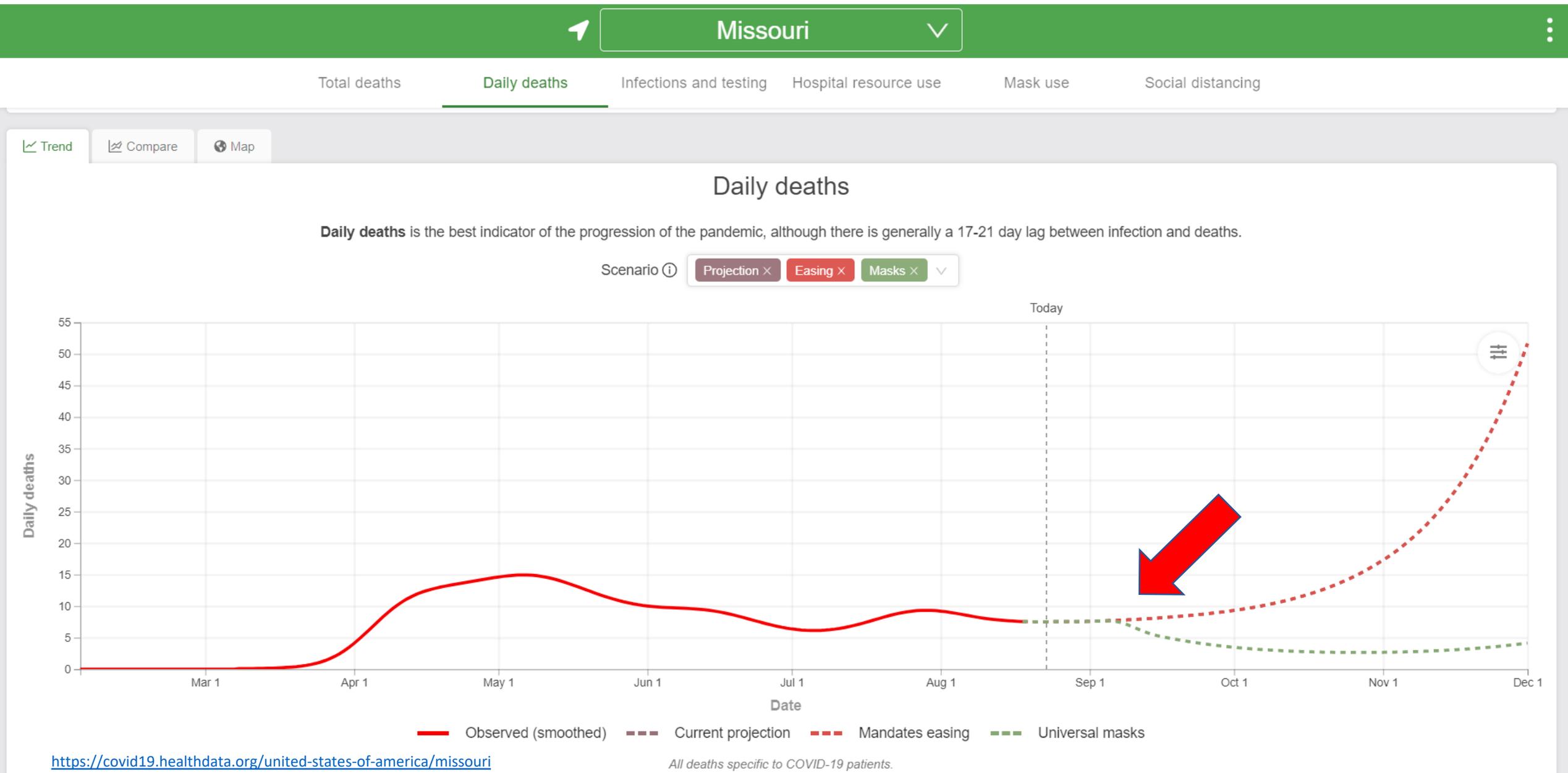


<https://covid19.healthdata.org/united-states-of-america/missouri>

• **8/23/20** “total deaths” projection for Missouri: depends on our behaviors!

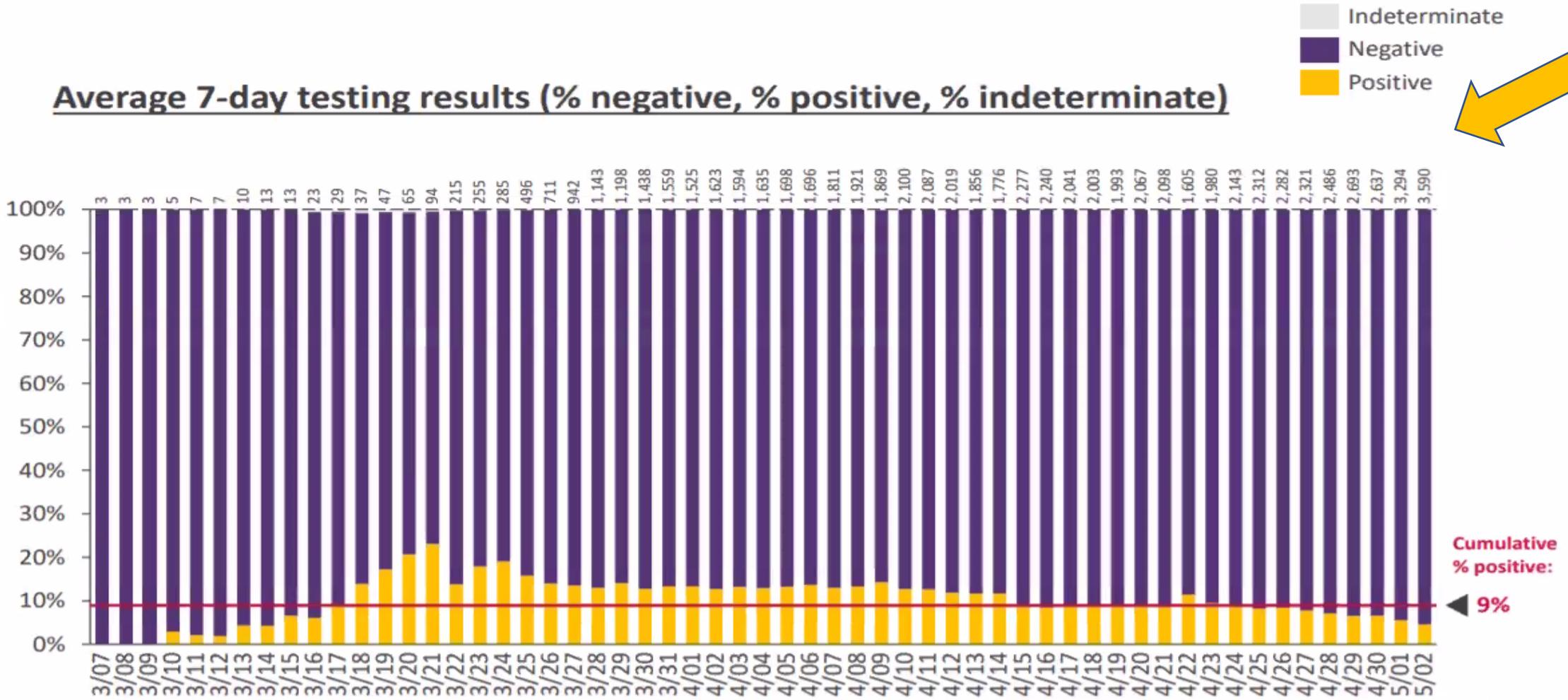


# • 8/23/20 “daily deaths” projection for Missouri: depends on our behaviors!



# COVID-19 testing: Positivity rate

**Average 7-day testing results (% negative, % positive, % indeterminate)**

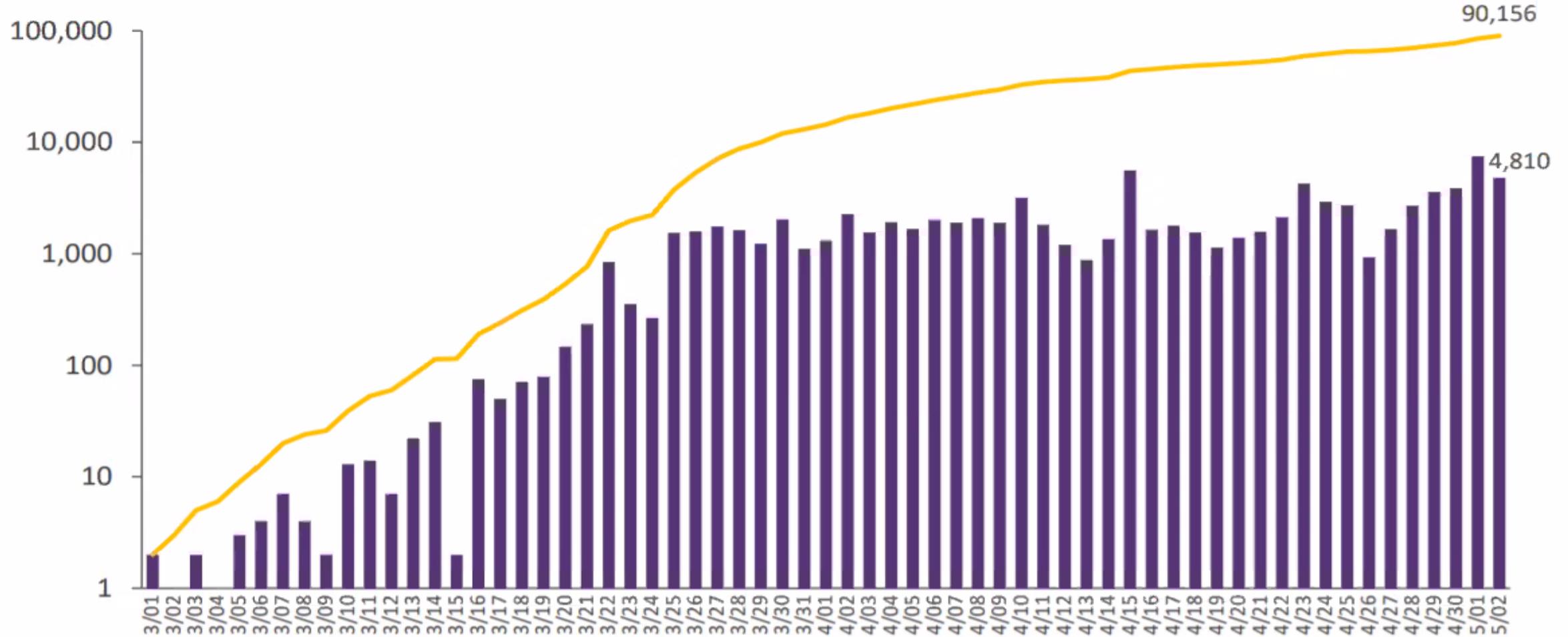


Source: Missouri Department of Health and Senior Services

# COVID-19 testing: Overview

■ Daily testing  
— Cumulative testing

# of tests conducted  
(log scale)



# Missouri COVID-19 Dashboard: The Spread of COVID-19 in Missouri

- COVID - Overview
- Cases - Demographics
- Cases - County
- Testing - PCR
- Testing - Serology
- Deaths
- Hospitalizations

## PCR Tested Individuals

924,078

## Individuals with Positive PCR Results

75,627

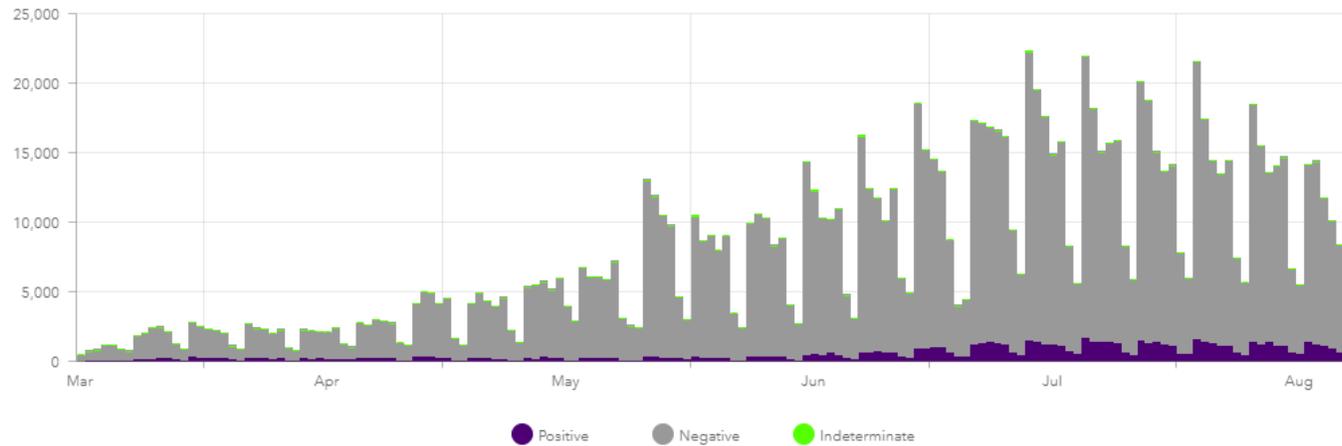
## Percent Positive of All Patients Tested by PCR

8.2%

## 7 Day Percent Positive of PCR Tested Individuals

11.4%

## Daily COVID-19 PCR Test Encounter Results



See [documentation](#) for more information.  
Page last updated 8/25/2020

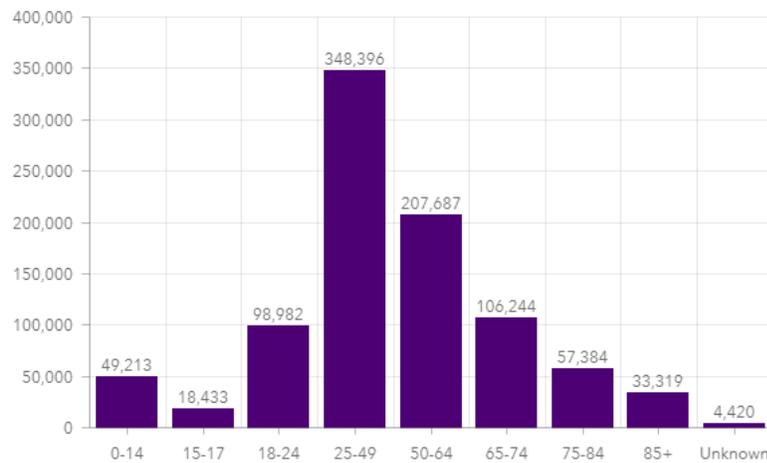
### About Testing:

A **PCR** test looks for the viral RNA in the nose, throat, or other areas in the respiratory tract to determine if there is an active infection with SARS-CoV-2, the virus that causes COVID-19. A positive PCR test means that the person has an active COVID-19 infection.

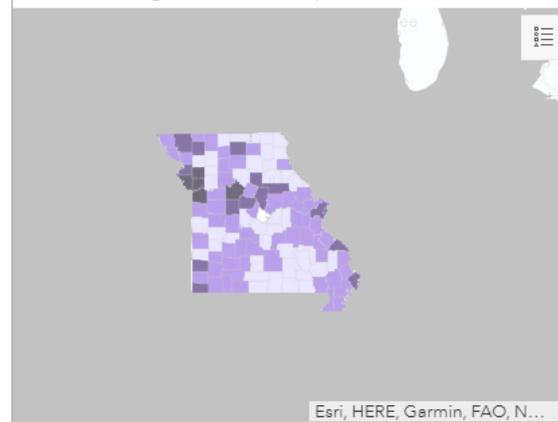
A **Serology** test looks for antibodies against SARS-CoV-2 in the blood to determine if there has been an infection in the past. Antibodies are formed by the body to fight off infections. A positive antibody test means that the person was infected with COVID-19 in the past or recently, and that their immune system developed antibodies to try to fight it off.

**Test encounters:** The number of tests conducted. An individual patient may have multiple test encounters.

## Age Distribution of PCR Tested Patients



## PCR Testing Per 100k Population



Note: Limited patient County information; where this information is missing (1/3 of test data), it is inferred from health facility or lab location

# Outline

- (1) COVID-19: the Basics
- (2) Am I at Risk?
- (3) #FlattenTheCurve
- **(4) Please don't be afraid to access medical care!**
- (5) COVID-19 is Coming to mid-Missouri
- (6) Health Recommendations
- (7) Updates on
  - Antibody Testing
  - Health Disparities
  - Children
  - Pregnancy

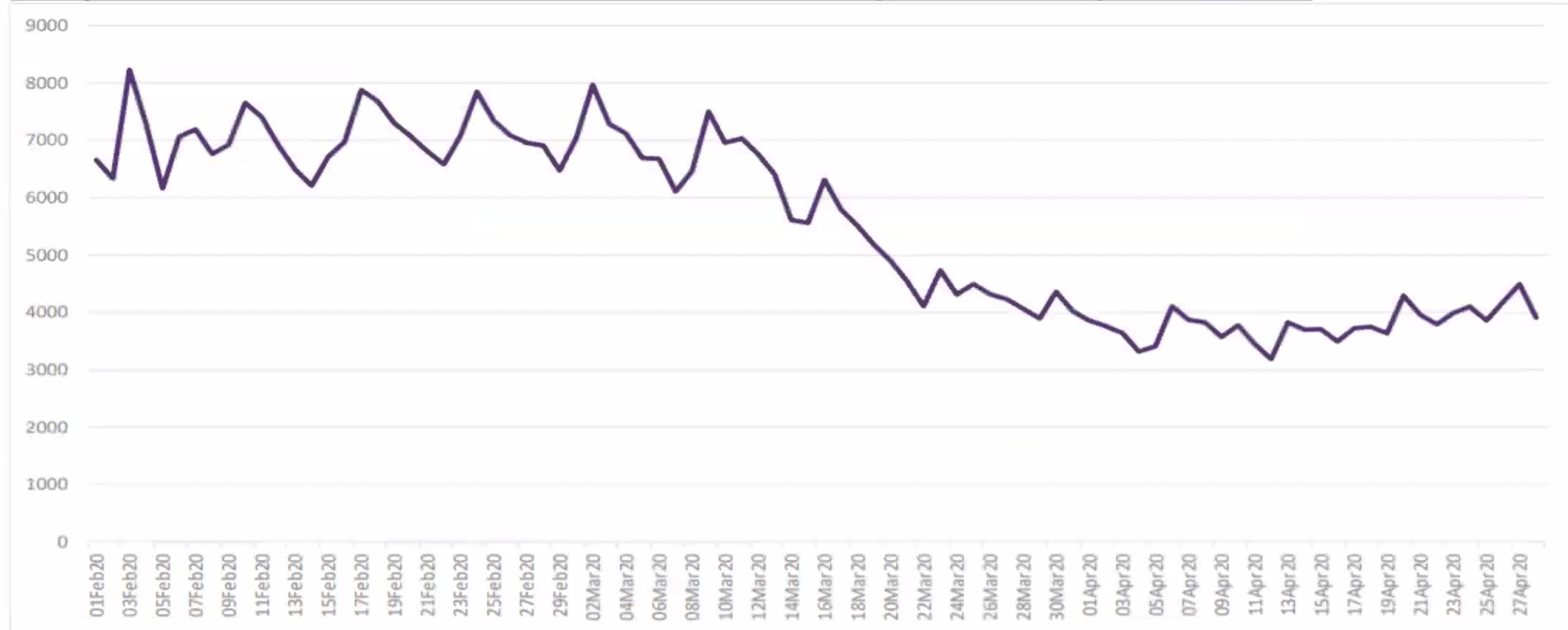


# “Where have all the heart attacks gone?”

- National decline in accessing medical care
- American College of Cardiology
  - “Since the start of COVID-19 containment efforts across the US, there has been a massive drop in the normal number of heart attack and stroke cases showing up at hospitals across the country”
- Fewer (non-COVID) emergency room visits

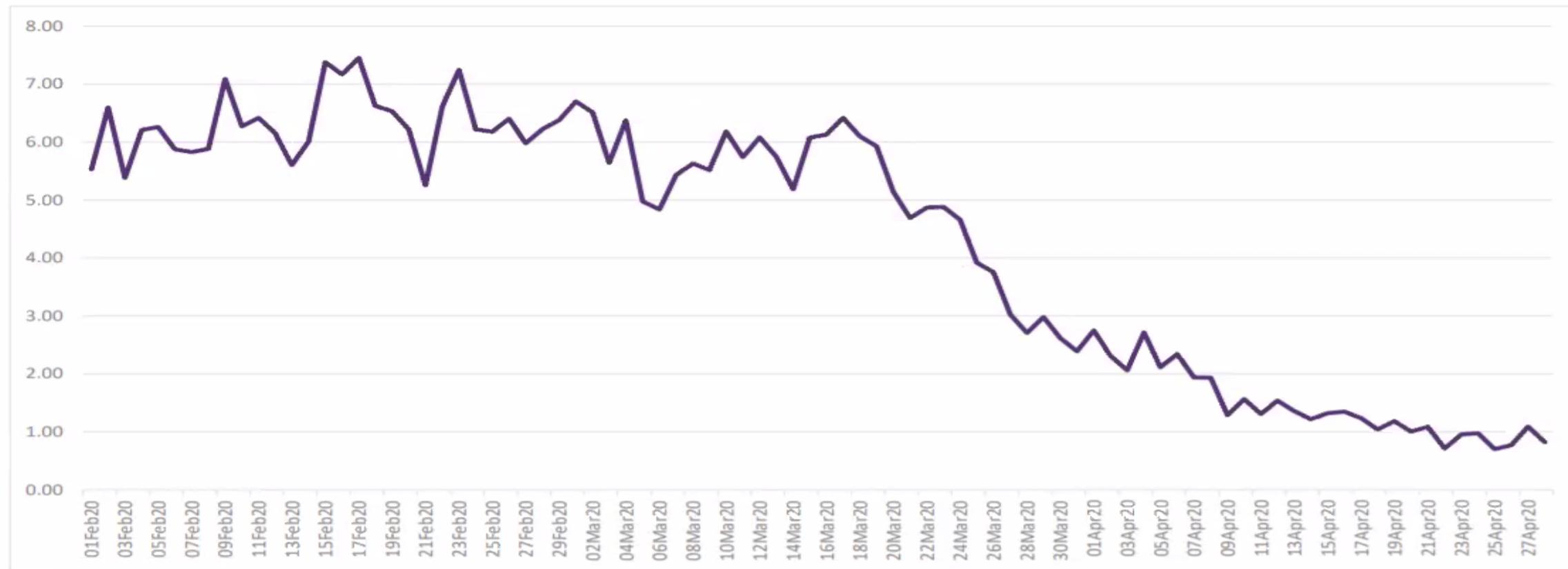
# Syndromic surveillance: Total emergency department visits

**Daily Total ED visits in Missouri ESSENCE, February 1, 2020 – April 28, 2020**



# Syndromic surveillance: ILI as a percentage of Total emergency department visits

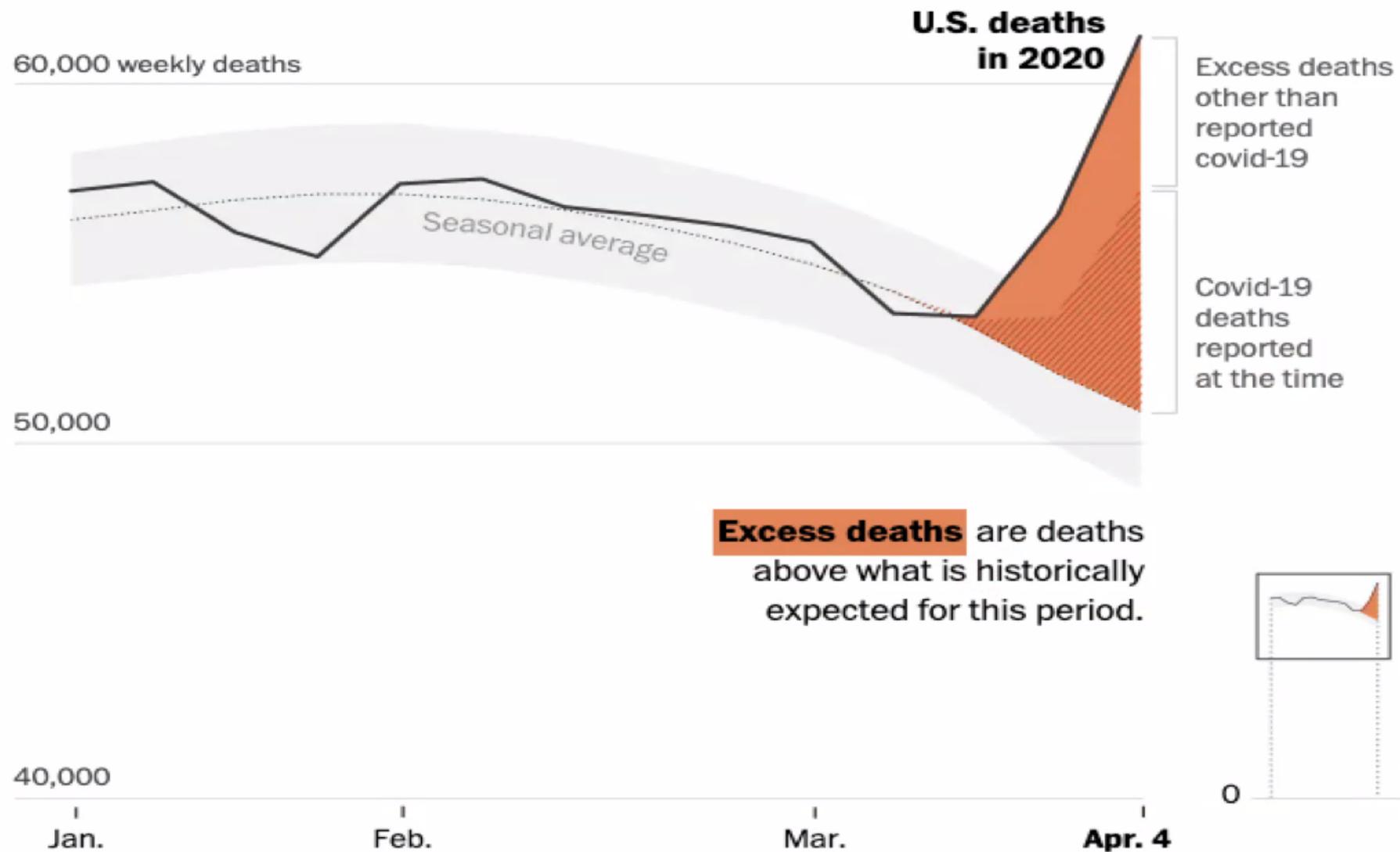
## Missouri Percentage of Emergency Department (ED) Visits for Influenza-like Illness (ILI in ESSENCE Participating Hospitals 02/01/2020 – 04/28/2020)



Note: Symptom-based query using key words: "fever", "cough", or "sore throat"

Source: Missouri Department of Health and Senior Services





Sources: Overall death data comes from the National Center for Health Statistics, covid-19 death counts come from state health departments and are compiled by The Washington Post, and estimates for expected deaths come from Yale School of Public Health's Modeling Unit.

*PLEASE don't be afraid to **contact your doctor***

- Most physicians' offices are **open** and doctors are seeing patients via virtual telemedicine visits.
  - If you have concerns about underlying medical conditions, please contact your health care provider.
- **Preventive care** is still important!
- **Please go to the emergency room for medical emergencies.**
  - To serve patients with other urgent needs, virtual telemedicine visits and drive-thru COVID-19 testing....
- Your hospitals are open, safe, and ready to take care of you.

Please don't be afraid of the **hospitals** either

- Hospitals' highest priority is keeping patients **safe**
  - Patients who are positive for COVID-19 *or awaiting results* are kept in **restricted areas**
  - Hospitals have rigorous **disinfectant protocols** in their buildings and for their equipment.
  - **Social and physical distancing** is used in clinics and hospitals.
  - Visitors are limited.
  - All patients, visitors and employees are screened for fever before entering the hospital.
- ***Don't let an untreated condition become an acute emergency.***

# Tentative “Health Matters” BCMS campaign

- “Health Care is Safe in mid-Missouri”

*A few months ago, we **told people to stay home**. The media was filled with stories of hospitals overwhelmed with COVID-19. New messaging:*

- “In mid-Missouri, we are thankful and appreciative that we still have a relatively low prevalence of COVID-19 right now.”
- “Don’t be afraid to access medical care.”
- “Don’t be afraid of your hospitals.”
- “Stop postponing your elective surgery, cancer surveillance, and preventive care.”



# Plan for Boone County Medical Society public service announcements (PSAs)

- Community leaders for video clips, to visit their primary care docs and/or visit hospital, etc ->
  - to emphasize that it's safe, and this is a great time to take care of any medical issues.
- We are seeking a unified/coordinated message from ALL THREE hospital systems that “it's safe to go see your primary care provider, to get elective surgery, to go to any of our 3 hospitals, or your physician-owned practices.”



I hope this talk has been (at least somewhat) informative and reassuring so far!

# Outline

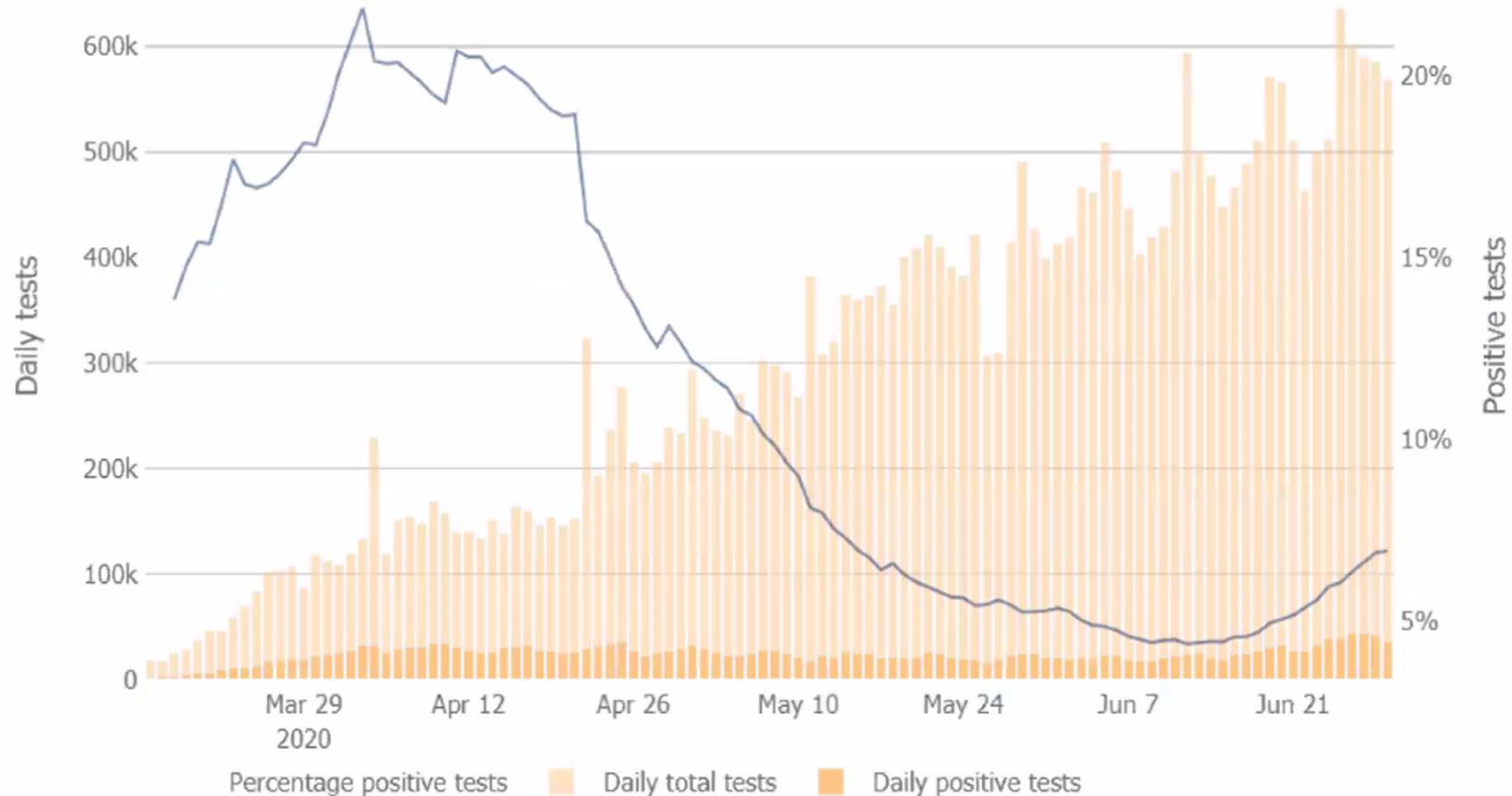
- (1) COVID-19: the Basics
- (2) Am I at Risk?
- (3) #FlattenTheCurve
- (4) Please don't be afraid to access medical care!
- **(5) COVID-19 is Coming to mid-Missouri**
- (6) Health Recommendations
- (7) Updates on
  - Antibody Testing
  - Health Disparities
  - Children
  - Pregnancy



- From Tue 6/30/20 webinar, Boone County Medical Society (Dr. Nelson):

# U.S. Updates

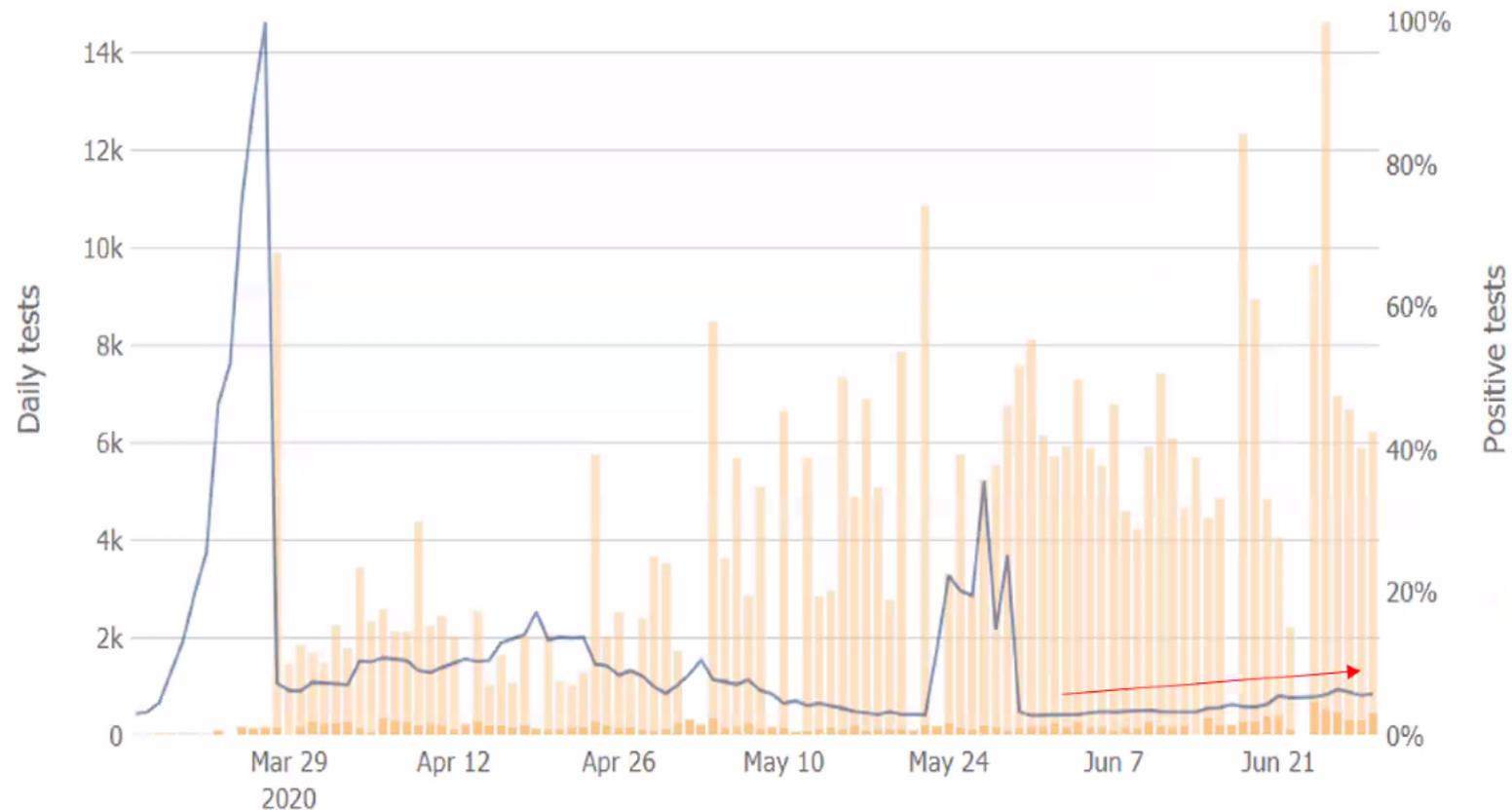
Johns Hopkins – Percent positive tests increasing



- From Tue 6/30/20 webinar, Boone County Medical Society (Dr. Nelson):

# Missouri Updates

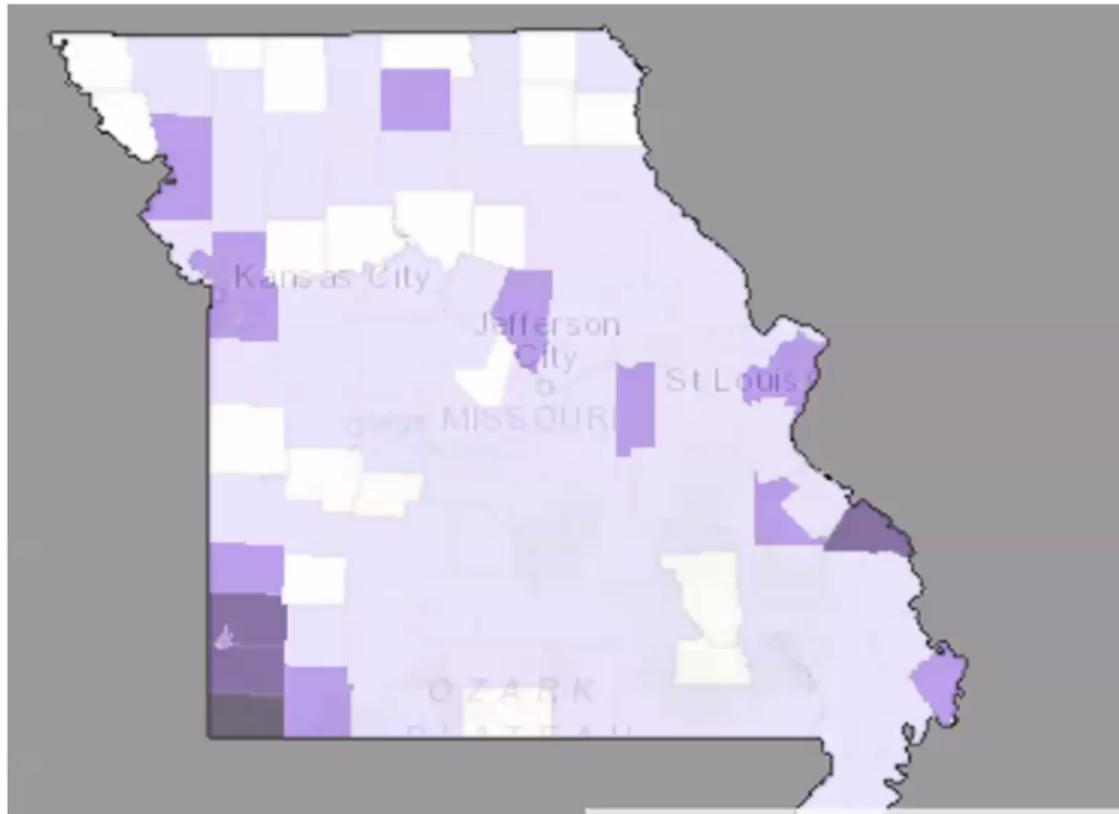
Johns Hopkins – Percent positive cases increasing



- From Tue 6/30/20 webinar, Boone County Medical Society (Dr. Nelson):

# Missouri Updates

MO Covid Dashboard (DHSS)



Darker purple = higher rate of new cases in the past 14 days

# 21,043

Lab Confirmed Cases in Missouri as of 2pm Today

# 1.6 % ▲

Change in Statewide Cases (24 hour)

\*Data Reflects 72 hour delay

# 9.7% ▲

Change in Statewide Cases (7 days)

# Missouri COVID-19 Dashboard: The Spread of COVID-19 in Missouri

- COVID - Overview
- Cases - Demographics
- Cases - County
- Testing - PCR
- Testing - Serology
- Deaths
- Hospitalizations

## THE SPREAD OF COVID-19 IN MISSOURI

See [documentation](#) for more information

### Mobile Site

(Click to view on mobile devices.)

Due to an increased COVID-19 test volume, DHSS may experience delays in data processing and reporting from laboratories and providers.

#### Lab Confirmed Cases in Missouri

76,636

#### Deaths Attributed to COVID-19

1,439

#### Number of New Cases Added in the Last 24 Hours

692

#### Number of New Deaths Reported in the Last 24 Hours

14

#### 7 Day Percent Positive of PCR Tested Individuals

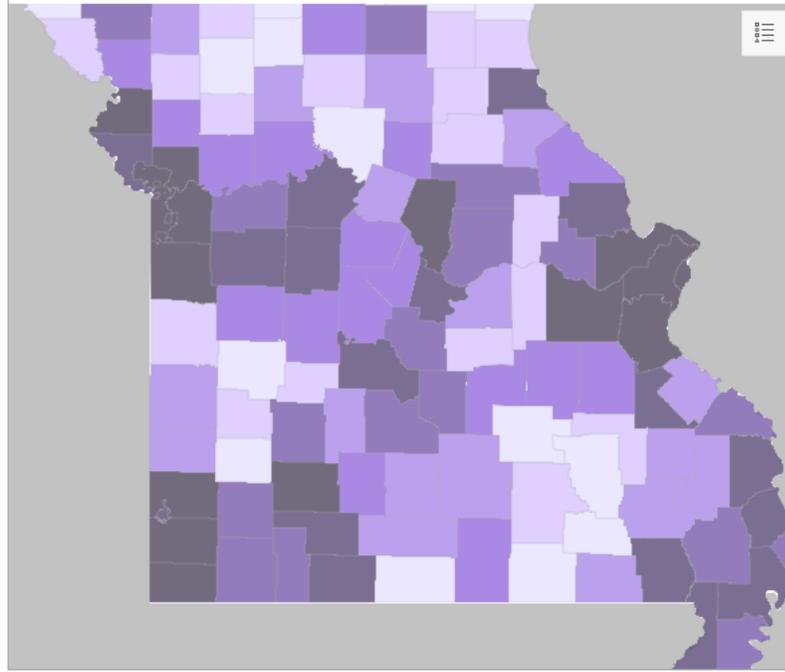
11.4%

#### Number of Hospitalizations due to COVID-19

925

\*Data reflects 72 hour delay

### COVID-19 Cases By Jurisdiction Of Residence



Time-based data, including one- and seven-day percent increase in statewide cases, daily COVID-19 test results, and cases and deaths by reported date, are subject to a 72-hour delay to ensure that the data are accurate and complete. (Example, on 5/15 the dashboard will report data for a period ending on 5/12). These data are provisional and will change daily. Investigations are being done on new cases, so as additional information is determined on these cases, such as county, demographics, and the total counts, will continue to change. Efforts are continually being made to improve data quality so that DHSS is providing the most accurate information possible.

### Cases By Jurisdiction

ADAIR	209
ANDREW	108
ATCHISON	20
AUDRAIN	243
BARRY	326
BARTON	84
BATES	62
BENTON	147
BOLLINGER	97
BOONE	1,984
BUCHANAN	1,197
BUTLER	354
CALDWELL	40
CALLAWAY	260
CAMDEN	471
CAPE GIRARDEAU	868
CARROLL	107
CARTER	27
CASS	975
CEDAR	46
CHARITON	23
CHRISTIAN	546
CLARK	33
CLAY	1,285
CLINTON	118

See [documentation](#) for more information.  
Page last updated 8/25/2020

#### RECENT UPDATES (8/25/20)

Added a map of Current Consecutive Days of Downward Trajectory by County on the Cases-County tab

#### Past Updates (7/25/20)

Hospitalization reporting has resumed with data beginning 7/25/2020. Included a smaller age breakdown of the cases (0-9 and 10-19)

#### Past Updates (7/24/20)

DHSS has listened to your feedback and has included some additional metrics to the COVID-19 dashboard.

- Restructured front page of dashboard to include new metrics
- Added New Cases Reported in Last 24 Hours
- Added New Deaths Reported in Last 24 Hours
- Added Average Age of COVID-19 patient (cumulative and within last 7 days)
- Added 7 Day Percent Positive of PCR Tested Individuals
- Updated documentation information to include more information about calculations, new metrics and how the data is analyzed. Updated location of documentation can be found [here](#).

Thank you for helping DHSS improve how we share this information. We appreciate your feedback and are dedicated to Protecting Health and Keeping People Safe  
-- The DHSS Dashboard Team

# Missouri COVID-19 Dashboard: The Spread of COVID-19 in Missouri

- COVID - Overview
- Cases - Demographics
- Cases - County
- Testing - PCR
- Testing - Serology
- Deaths
- Hospitalizations

## Average Age of a COVID-19 Patient

42

## Last 7 Days: Average Age of a COVID-19 Patient

40

## 24 Hour Change in Statewide Cases (rate per 100,000 pop.)

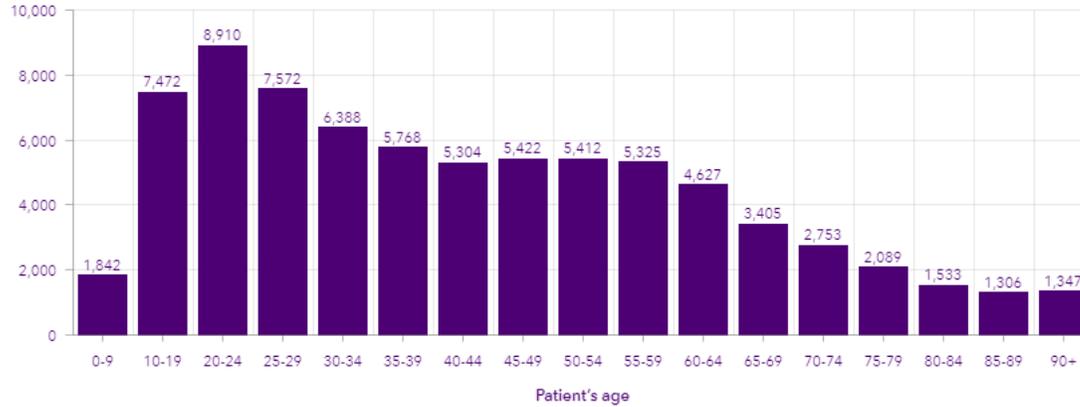
1.3%

\*Data reflects 72 hour delay

## 7 Day Change in Statewide Cases (rate per 100,000 pop.)

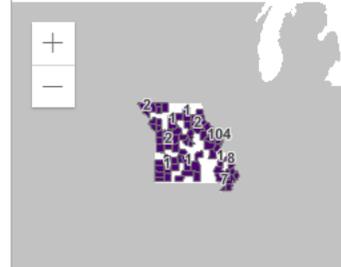
8.7%

## Missouri Covid-19 Cases By Age



For a more detailed breakdown of cases by age, [click here](#)

## Counties with Congregate Living Cases\*

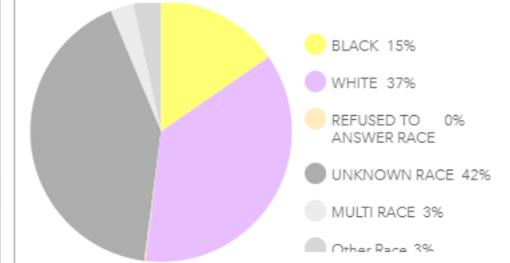


State of Missouri, SEMA Powered by Esri

\*This includes any facility with at least 1 resident or staff member with COVID-19. Congregate living facilities include: long-term care facilities, which include skilled nursing facilities, intermediate care facilities, assisted living facilities and residential

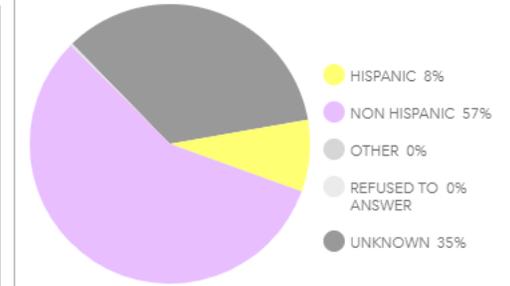
See [documentation](#) for more information. Page last updated 8/25/2020

## Cases By Race

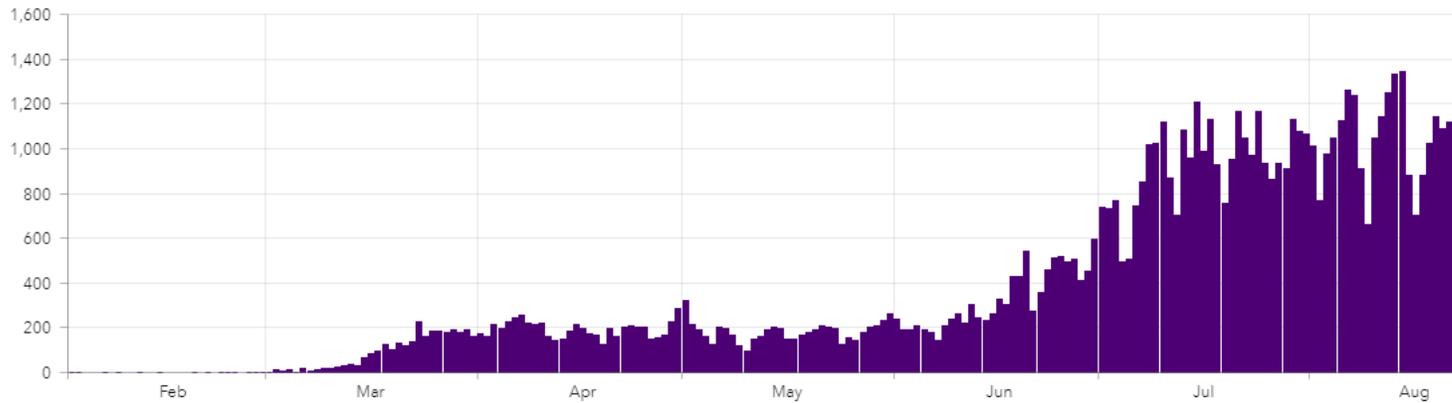


\*Other includes: Asian, Indian, Pacific. . Each with less than 1% of cases.

## Cases By Ethnicity



## Cases by Reported Date



Note: Data for recent dates may be incomplete due to a delay in reporting

- Daily Confirmed Cases
- Cumulative Confirmed Cases

## Cases By Biological Sex

Male: 34,130  
Female: 40,108  
Unknown\*\*: 2,398

\*\*Some results do not initially contain this information, it will be updated as it is received

- As of **6/18/20**

# M Health Care

## Response Level

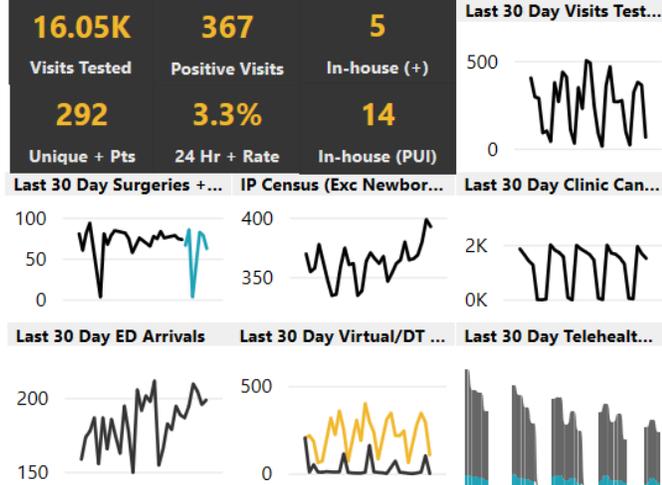
### Continued Active Response Environment to COVID-19 (C.A.R.E.)

Item	Level	Comments (Hover)
Admissions	🟡	At least one confirmed cases within o...
Blood	🟢	No issues at this time
Cases	🔴	Substantial community spread. More...
Lab Supplies	🟢	Continued acquisition of nasal swabs
Respiratory	🟢	
Staffing	🟢	Need staff? call Labor Pool 882-2939. ...

### Line Chart Controls

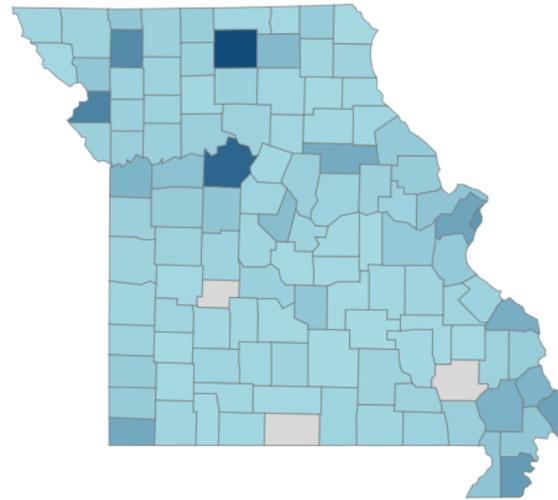
Last 7 Days (Daily)	Last 30 Days (Daily)	Cumulative Volumes
MUHC Volumes		

*NOTE: Testing volumes will continue to be revised as new processes are implemented.*



# COVID-19 Situational Awareness

## State Data



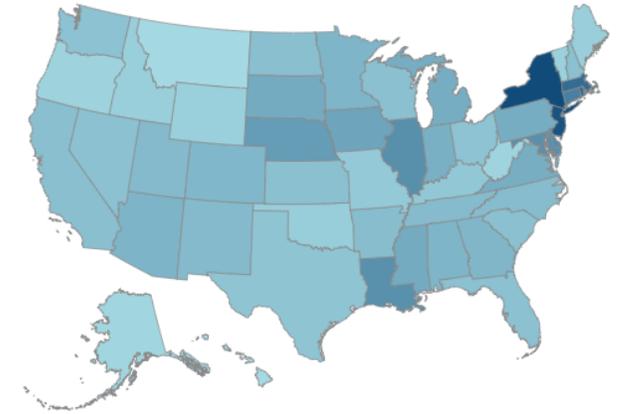
## National Data

Map Measure

Confirmed Cases per Capita

State

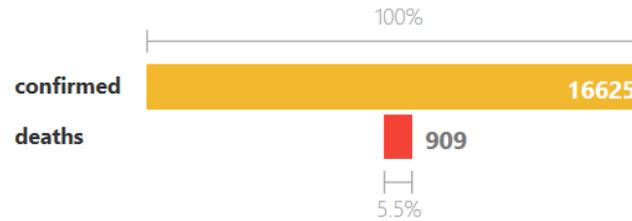
County



Click a Missouri County or State to Filter the Respective Metrics Below

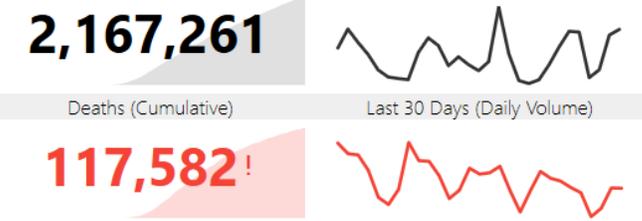
### Case Volumes

#### Missouri Case Counts



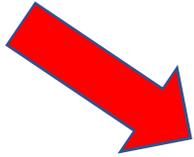
Source: [Missouri Department of Health and Senior Services](#)

Confirmed (Cumulative) Last 30 Days (Daily Volume)



Source: [The New York Times](#); Data will update as released.

June 17



• As of **7/28/20**

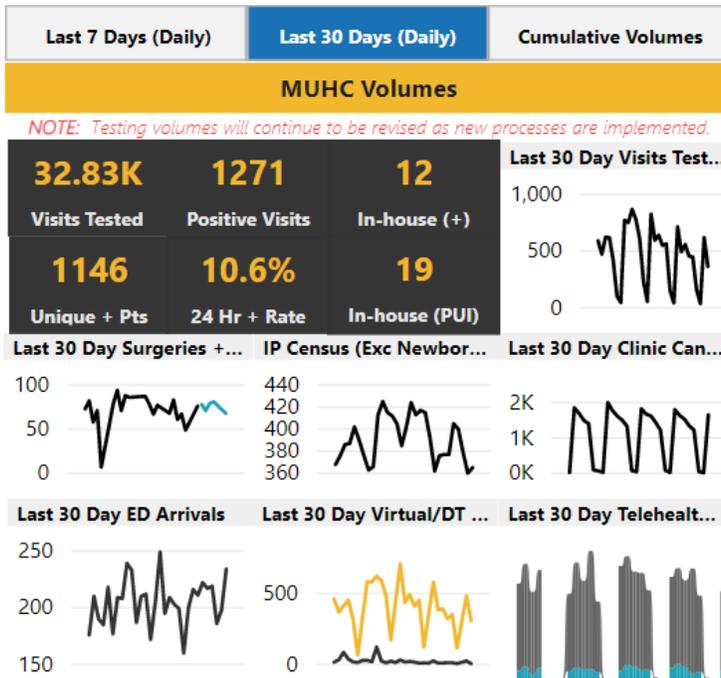
# M Health Care

## Response Level

### Continued Active Response Environment to COVID-19 (C.A.R.E.)

Item	Level	Comments (Hover)
Admissions	🟡	At least one confirmed cases within o...
Blood	🟢	No issues at this time
Cases	🔴	Substantial community spread. More...
Lab Supplies	🟢	Continued acquisition of nasal swabs
Respiratory	🟢	
Staffing	🟢	Please refer to the CARES response pl...

### Line Chart Controls



# COVID-19 Situational Awareness

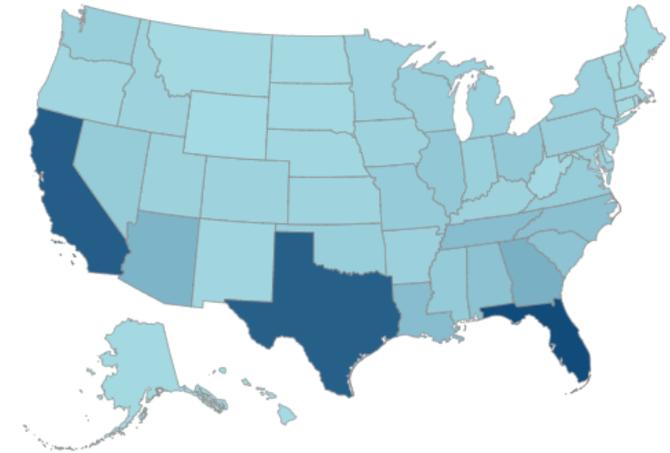
## State Data



Map Measure

Active Cases

## National Data



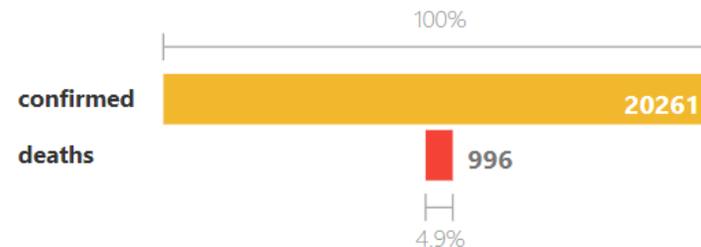
State

County

Click a Missouri County or State to Filter the Respective Metrics Below

### Case Volumes

#### Missouri Case Counts



Confirmed (Cumulative)

**4,286,652**

Deaths (Cumulative)

**148,234!**

Last 30 Days (Daily Volume)



Last 30 Days (Daily Volume)



Source: [Missouri Department of Health and Senior Services](#)

Source: [The New York Times](#); Data will update as released.

July 27

- As of **Tue 8/25/20**

# M Health Care

## Response Level

### Continued Active Response Environment to COVID-19 (C.A.R.E.)

Item	Level	Comments (Hover)
Admissions	🟡	At least one confirmed cases within o...
Blood	🟢	No issues at this time
Cases	🔴	Substantial community spread. More...
Lab Supplies	🟢	Continued acquisition of nasal swabs
Respiratory	🟢	
Staffing	🟢	Please refer to the CARES response pl...

### Line Chart Controls

Last 7 Days (Daily)	Last 30 Days (Daily)	Cumulative Volumes
<b>MUHC Volumes</b>		

*NOTE: Testing volumes will continue to be revised as new processes are implemented.*

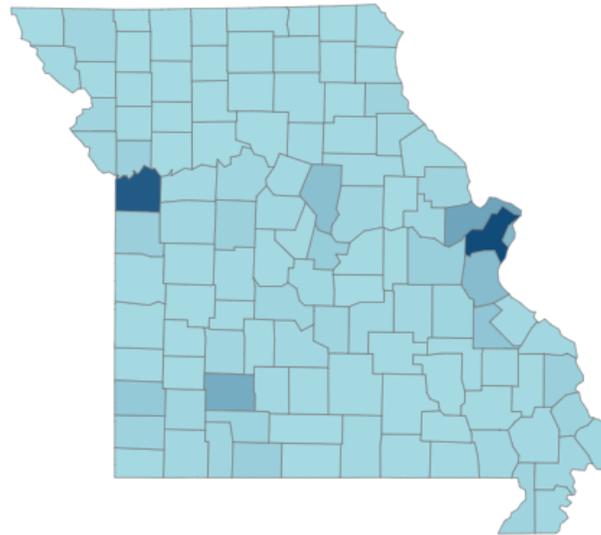
<b>43,295</b>	<b>2374</b>	<b>21</b>	Last 30 Day Visits Test... 
Visits Tested	Positive Visits	In-house (+)	
<b>2205</b>	<b>20.1%</b>	<b>21</b>	Last 30 Day Clinic Can... 
Unique + Pts	24 Hr + Rate	In-house (PUI)	

Last 30 Day Surgeries + ... 	IP Census (Exc Newbor... 	Last 30 Day Clinic Can... 
---------------------------------	------------------------------	-------------------------------

Last 30 Day ED Arrivals 	Last 30 Day Virtual/DT ... 	Last 30 Day Telehealt... 
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# COVID-19 Situational Awareness

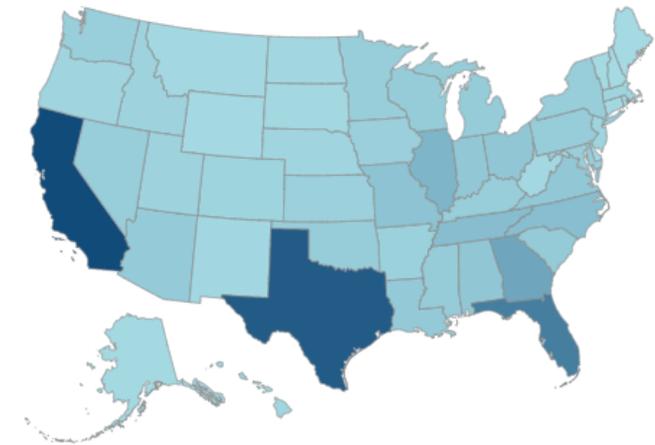
## State Data



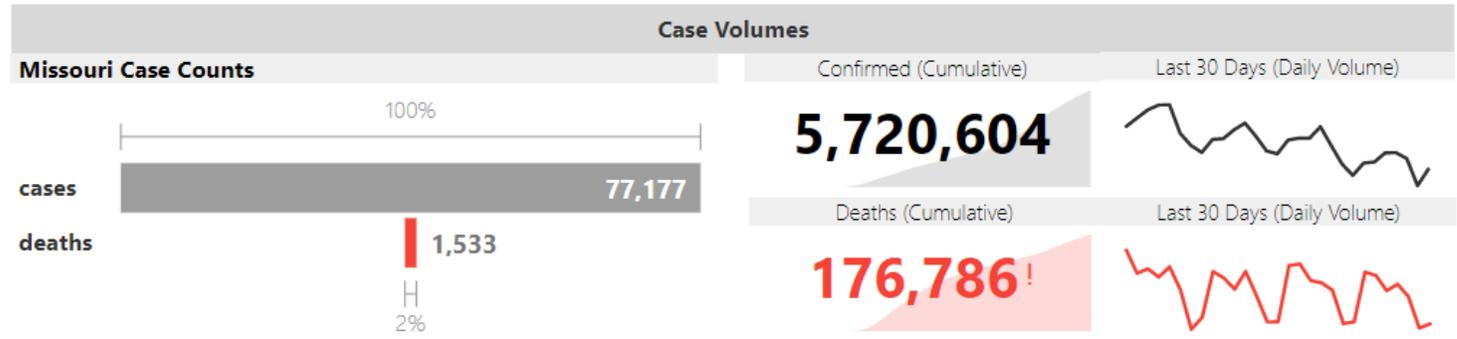
Map Measure

Active Cases

## National Data



Click a Missouri County or State to Filter the Respective Metrics Below



Source: [The New York Times](#); Data will update as released. August 24



- From Fri 4/24/20 webinar, Medical Society of Virginia / VA Dept of Health:



## Modeling



### Statistical Models

- IHME model
- Projections based on curves that are fitted to historical data
- Include other factors as controls, such as policy responses



### Systems Dynamics Models

- UVA model and CHIME model
- Assume exponential growth in the number infected
- Rely on estimates of the rate of spread

- From Fri 4/24/20 webinar, Medical Society of Virginia / VA Dept of Health:



## Model Strengths & Weaknesses



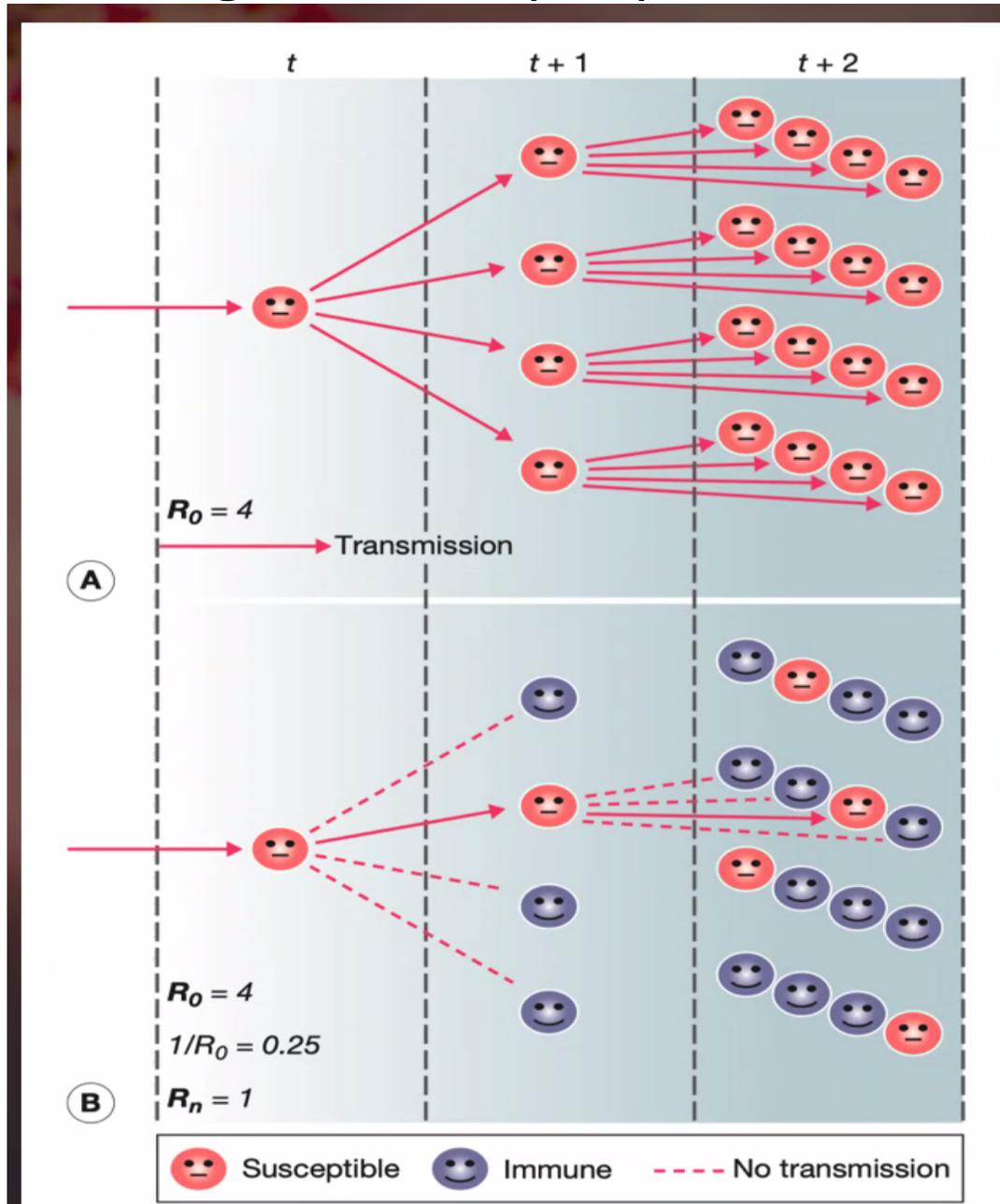
Type of Model	Systems Dynamics	Statistical	Alternative
Example	UVA and CHIME	IHME	VDH
Degree of a Threat	Somewhat suitable	Somewhat suitable	Highly Suitable
Rate of Spread	Suitable	Somewhat suitable	Highly Suitable
Extent of Spread	Somewhat suitable	Not Suitable	Somewhat suitable
Timing of the Peak	Somewhat suitable	Somewhat suitable	Somewhat suitable
Severity	Somewhat suitable	Somewhat suitable	Somewhat suitable

 Highly Suitable  
 Suitable

 Somewhat suitable  
 Not Suitable

Derived from: Manheim, David, Margaret Chamberlin, Osonde A. Osoba, Raffaele Vardavas, and Melinda Moore, Improving Decision Support for Infectious Disease Prevention and Control: Aligning Models and Other Tools with Policymakers' Needs. Santa Monica, CA: RAND Corporation, 2016.  
[https://www.rand.org/pubs/research\\_reports/RR1576.html](https://www.rand.org/pubs/research_reports/RR1576.html)

- “R-naught” = # of people that will be infected by each contagious individual



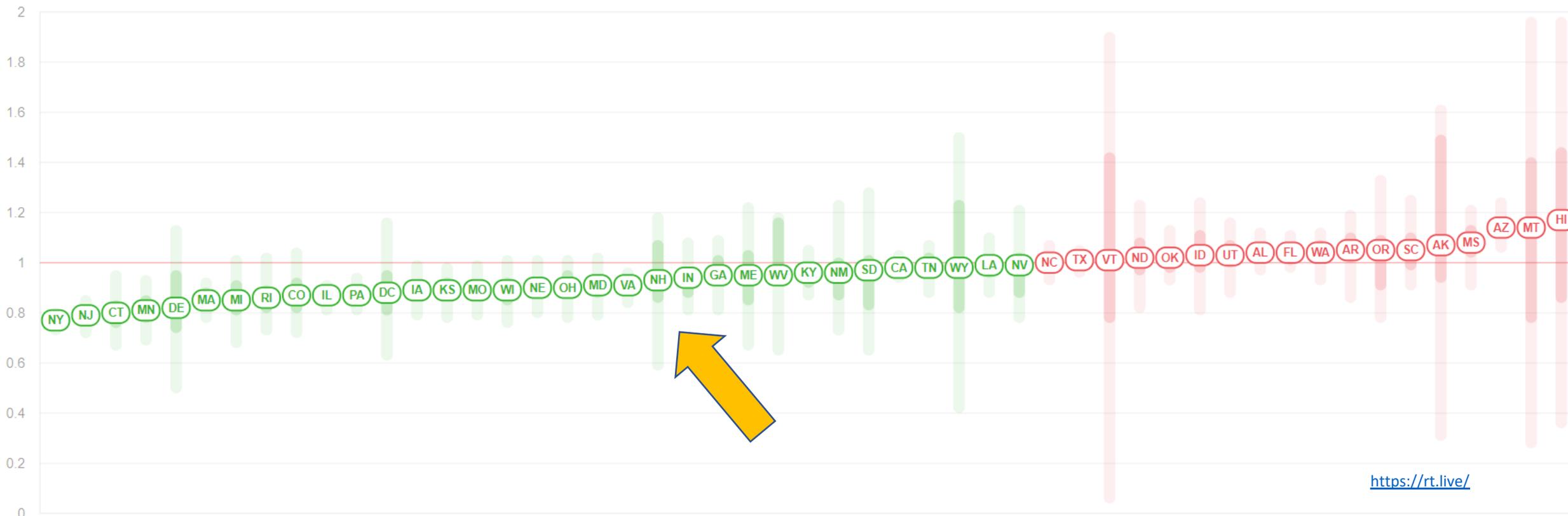
- “adjusted R-naught” for COVID-19, as of **6/16/20** (NY great, MS/AZ not)  
**R<sub>t</sub> Covid-19**

These are up-to-date values for R<sub>t</sub>, a key measure of how fast the virus is growing. It's the average number of people who become infected by an infectious person. If R<sub>t</sub> is above 1.0, the virus will spread quickly. When R<sub>t</sub> is below 1.0, the virus will stop spreading. [Learn More](#).

5/20 model update: some states' R<sub>t</sub> have changed because we improved our testing volume adjustments.

Data Last Updated: 6/15 at 11:06AM

Latest Last Week 2 Weeks Ago 4 Weeks Ago 6 Weeks Ago Highlight State



- “adjusted R-naught” for COVID-19, as of **7/19/20**

# $R_t$ COVID-19

These are up-to-date values for  $R_t$ , a key measure of how fast the virus is growing. It's the average number of people who become infected by an infectious person. If  $R_t$  is above 1.0, the virus will spread quickly. When  $R_t$  is below 1.0, the virus will stop spreading. [Learn More](#).

See details about the spread in **Missouri**

Data Last Updated: 7/18 at 1:38PM

Latest

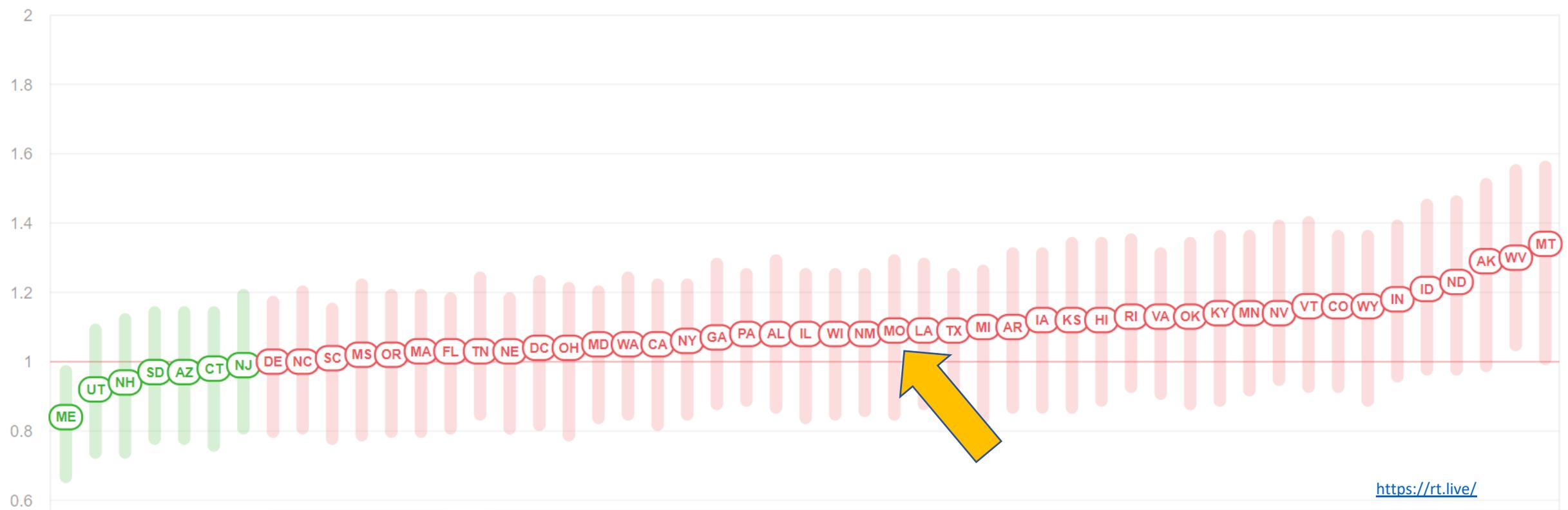
2 Weeks Ago

1 Month Ago

2 Months Ago

3 Months Ago

Filter



<https://rt.live/>

- “adjusted R-naught” for COVID-19, as of **7/28/20** (focus on Midwest)

# R<sub>t</sub> COVID-19

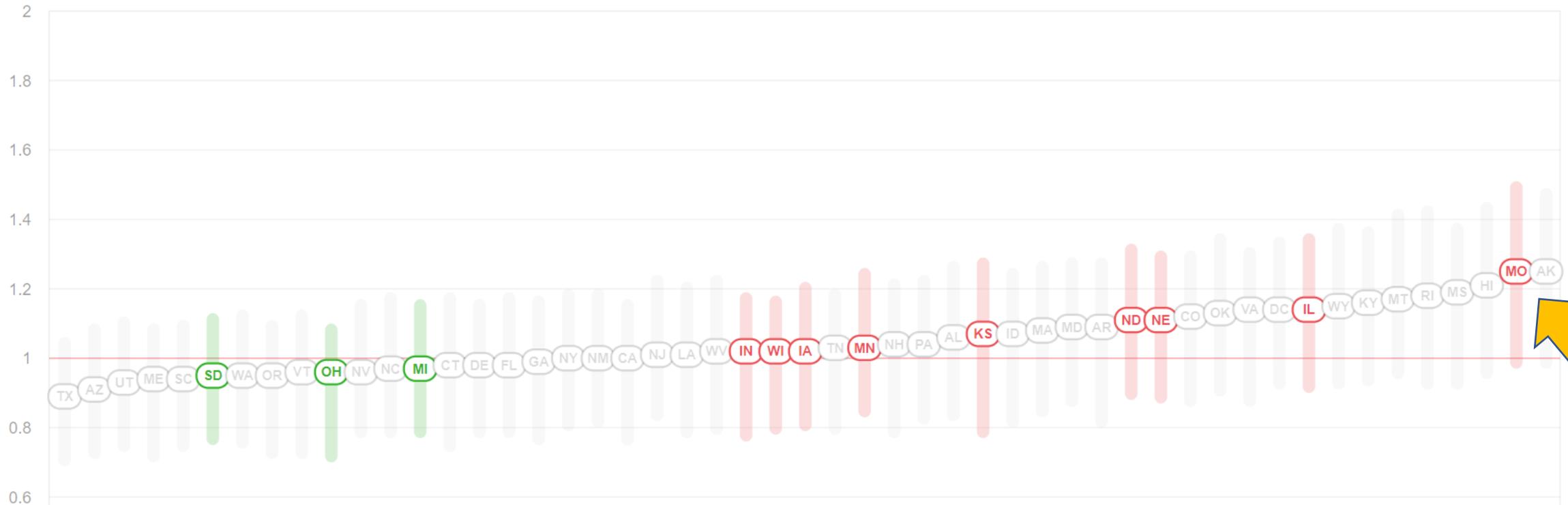
[Tweet](#) [Share](#)

These are up-to-date values for R<sub>t</sub>, a key measure of how fast the virus is growing. It's the average number of people who become infected by an infectious person. If R<sub>t</sub> is above 1.0, the virus will spread quickly. When R<sub>t</sub> is below 1.0, the virus will stop spreading. [Learn More](#).

[See details about the spread in Missouri](#)

Data Last Updated: 7/28 at 11:12AM

Latest 2 Weeks Ago 1 Month Ago 2 Months Ago 3 Months Ago Filter



# R<sub>t</sub> COVID-19

- “adjusted R-naught” for COVID-19, as of **8/23/20**

These are up-to-date values for R<sub>t</sub>, a key measure of how fast the virus is growing. It's the average number of people who become infected by an infectious person. If R<sub>t</sub> is above 1.0, the virus will spread quickly. When R<sub>t</sub> is below 1.0, the virus will stop spreading. [Learn More](#).

See details about the spread in [Missouri](#)

Data Last Updated: 8/23 at 10:18AM

Latest

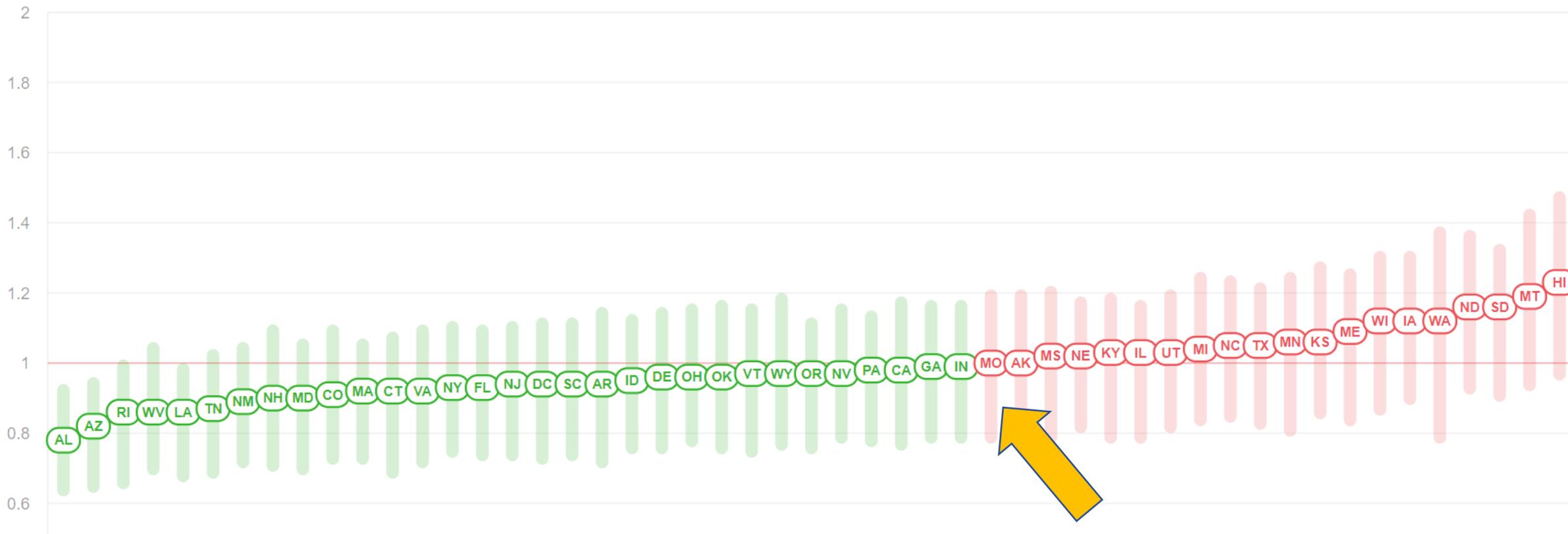
2 Weeks Ago

1 Month Ago

2 Months Ago

3 Months Ago

Filter



# Missouri

Tweet

Share

Current  $R_t$

**1.00**

Cases

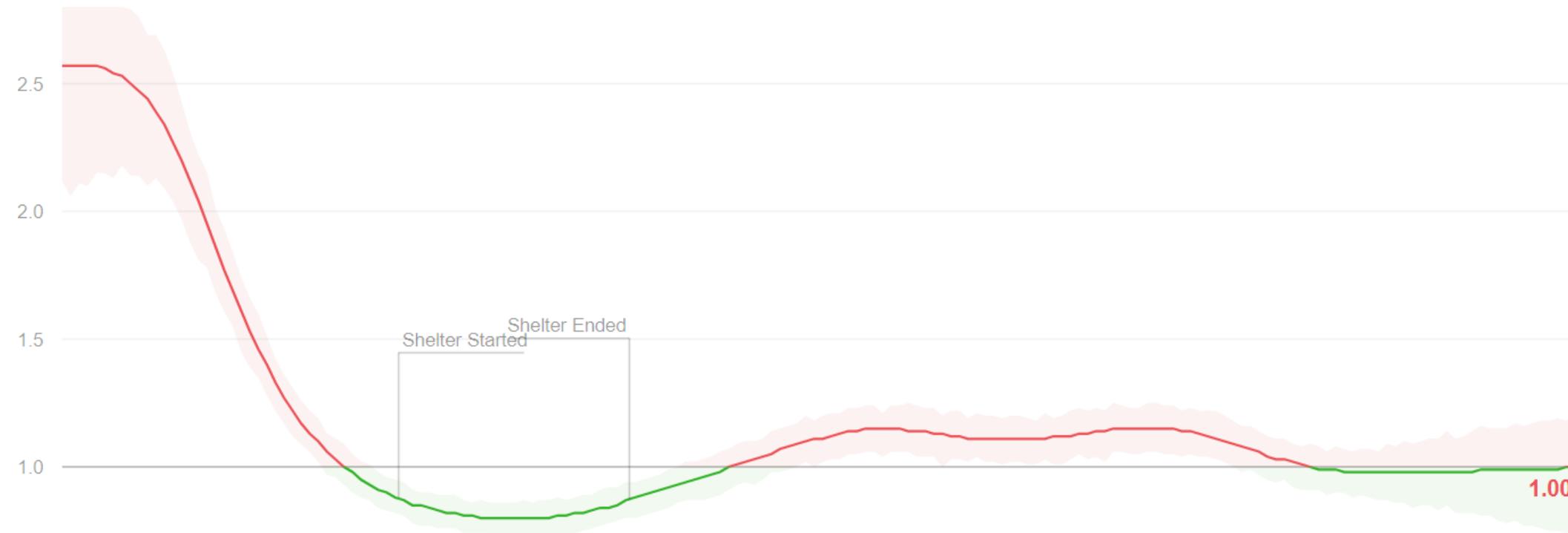
**74,257**

Tests

**904,694**

## Effective Reproduction Rate · $R_t$

$R_t$  is the average number of people who become infected by an infectious person. If it's above 1.0, COVID-19 will spread quickly. If it's below 1.0, infections will slow. [Learn More](#).



• as of **5/15/20**

**JOHNS HOPKINS UNIVERSITY & MEDICINE** | **CORONAVIRUS RESOURCE CENTER**

Home | Maps & Trends | Testing | News & Information | COVID-19 Basics | Videos & Live Events

World Map | **NEW** U.S. Map | Critical Trends

### COVID-19 United States Cases by County

Johns Hopkins University

States/Territories: Please select from list | County (or Equivalent): Please select from list

#### Top 50 Confirmed Cases by County

- 58,457 confirmed  
Cook
- 57,459 confirmed  
Queens
- 50,674 confirmed  
Kings
- 42,222 confirmed  
Bronx
- 38,743 confirmed  
Nassau
- 37,544 confirmed  
Suffolk
- 35,392 confirmed  
Los Angeles
- 31,792 confirmed  
Westchester
- 23,056 confirmed  
New York
- 19,093 confirmed  
Philadelphia
- 18,770 confirmed  
Wayne
- 18,381 confirmed  
Middlesex

Confirmed by Population | **Confirmed** | Deaths | Fatality Rate

#### Top 20 Counties by Number of Deaths

- 4,676 deaths  
Kings
- 4,595 deaths  
Queens
- 3,284 deaths  
Bronx
- 2,675 deaths  
Cook
- 2,183 deaths  
Wayne
- 2,048 deaths  
New York
- 2,016 deaths  
Nassau
- 1,711 deaths  
Los Angeles
- 1,607 deaths

Confirmed | Deaths

Data is updated once per day after 8 p.m. Eastern 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.

Map Visualization: [Centers for Civic Impact](#). Automation Support: [Esri Living Atlas team](#), [JHU APL](#), and [JHU Sheridan Libraries](#). Contact Us. [FAQ](#).

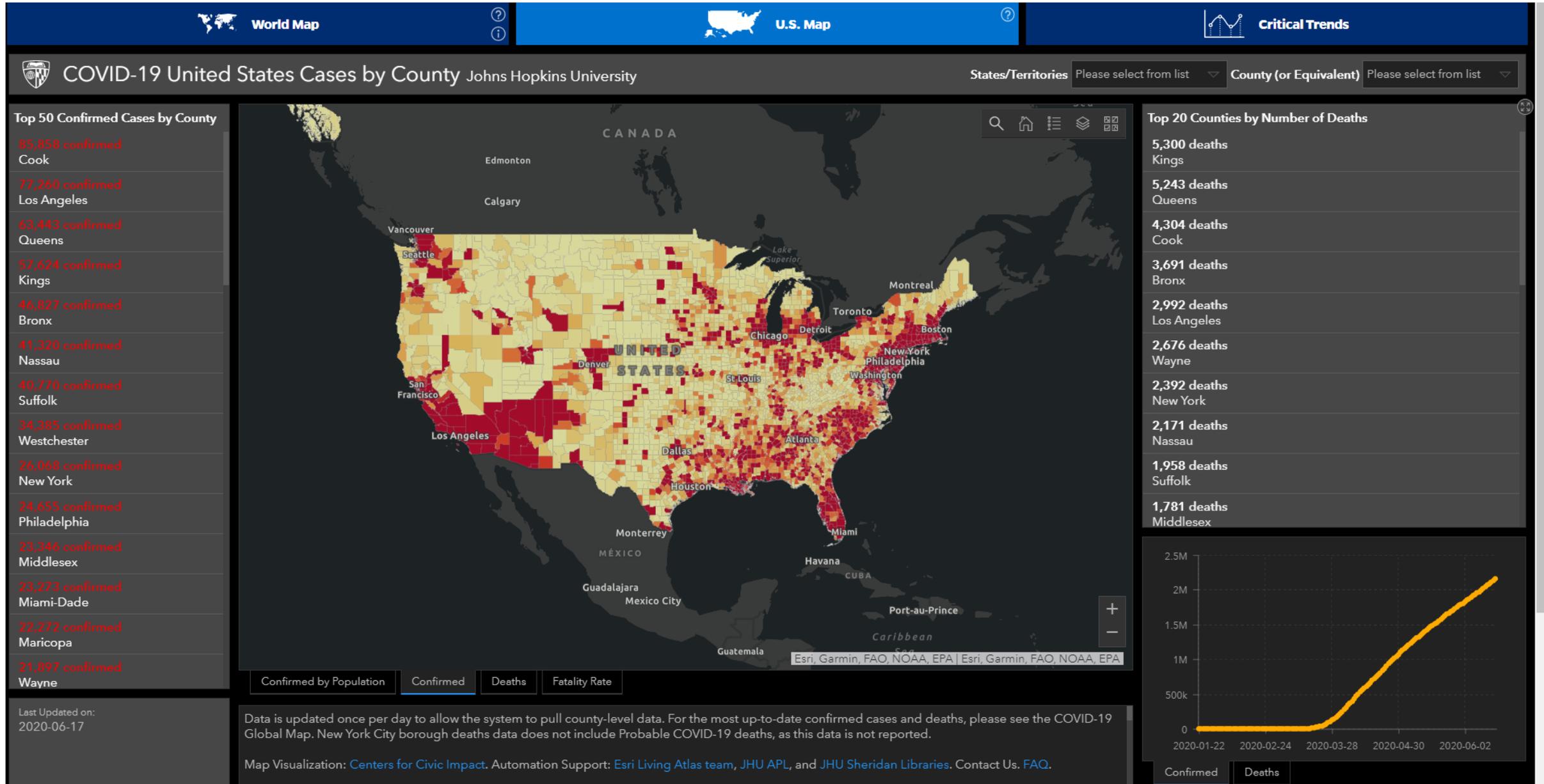
Esri, Garmin, FAO, NOAA, EPA | Esri, Garmin, FAO, NOAA, EPA

Last Updated on: 2020-05-14

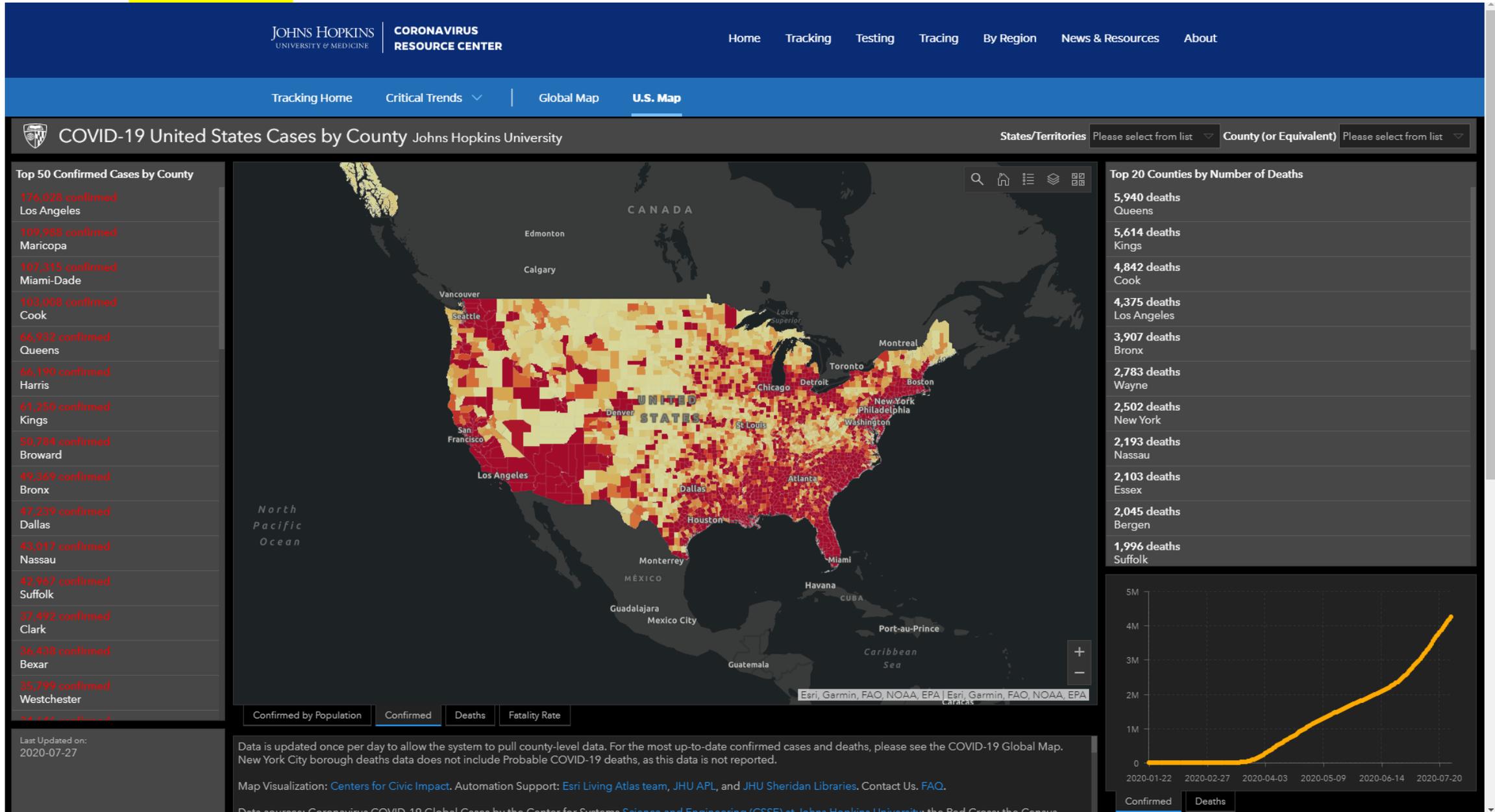
Type here to search

1:13 PM 05/15/2020

• as of **6/19/20**



• as of **7/28/20**



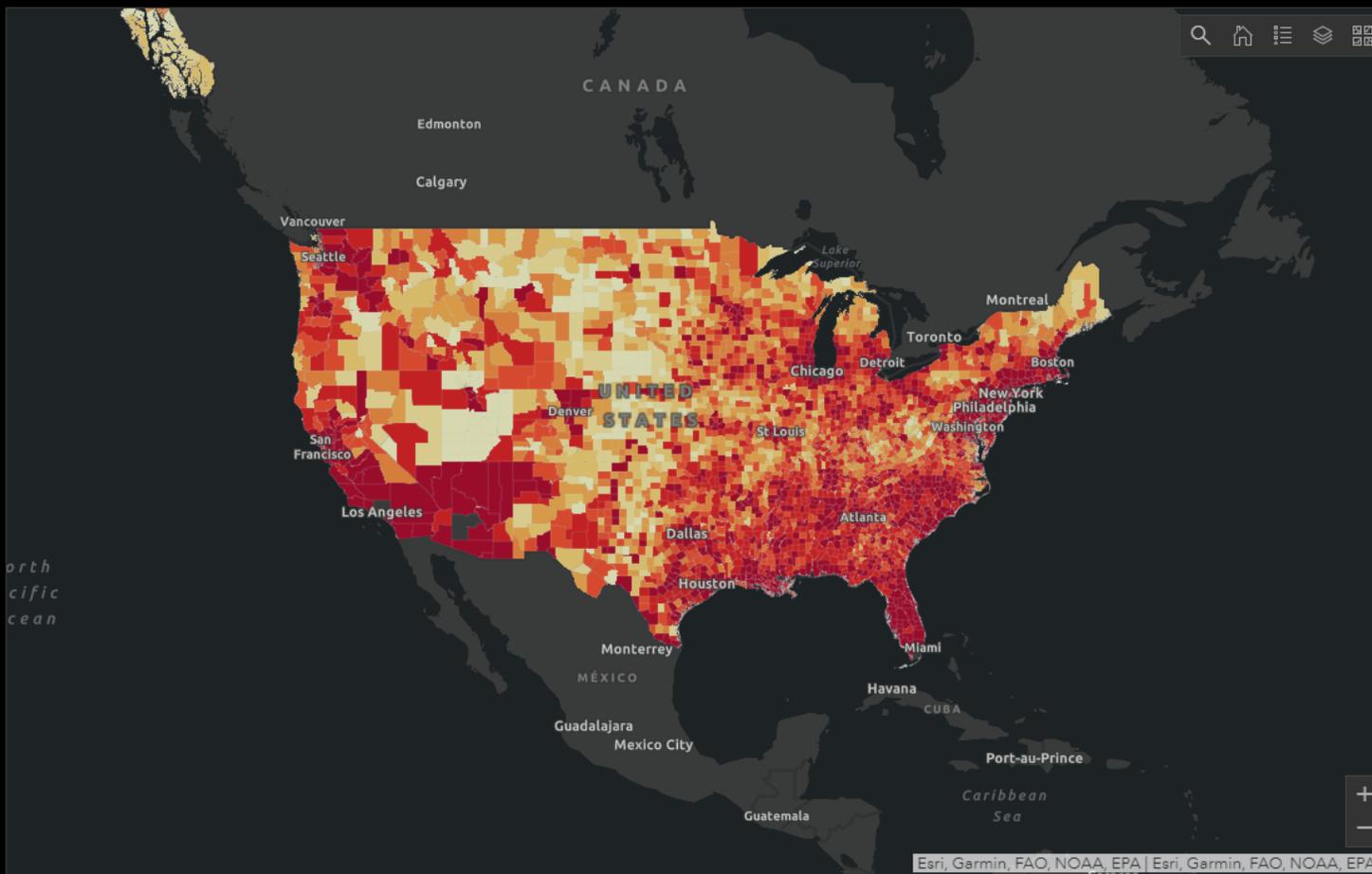
• as of **8/17/20**

COVID-19 United States Cases by County Johns Hopkins University

States/Territories Please select from list County (or Equivalent) Please select from list

Top 50 Confirmed Cases by County

221,971 confirmed	Los Angeles
145,307 confirmed	Miami-Dade
129,385 confirmed	Maricopa
115,960 confirmed	Cook
92,253 confirmed	Harris
68,490 confirmed	Queens
66,447 confirmed	Broward
63,428 confirmed	Dallas
63,075 confirmed	Kings
52,847 confirmed	Clark
50,778 confirmed	Bronx
45,642 confirmed	Riverside
44,359 confirmed	Suffolk
44,052 confirmed	Bexar
43,929 confirmed	Nassau



Confirmed by Population Deaths by Population **Confirmed** Deaths Fatality Rate

Top 20 Counties by Number of Deaths

5,977 deaths	Queens
5,638 deaths	Kings
5,254 deaths	Los Angeles
4,962 deaths	Cook
3,949 deaths	Bronx
2,839 deaths	Wayne
2,596 deaths	Maricopa
2,519 deaths	New York
2,195 deaths	Nassau
2,110 deaths	Essex
2,057 deaths	Miami-Dade



Last Updated on: 2020-08-16

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.

- From Fri 4/24/20 webinar, Medical Society of Virginia / VA Dept of Health:

## UVA Model: Simulation Engine - PatchSim

### Metapopulation model

- Represents each population and its interactions as a single patch
- 133 patches for Virginia counties and independent cities

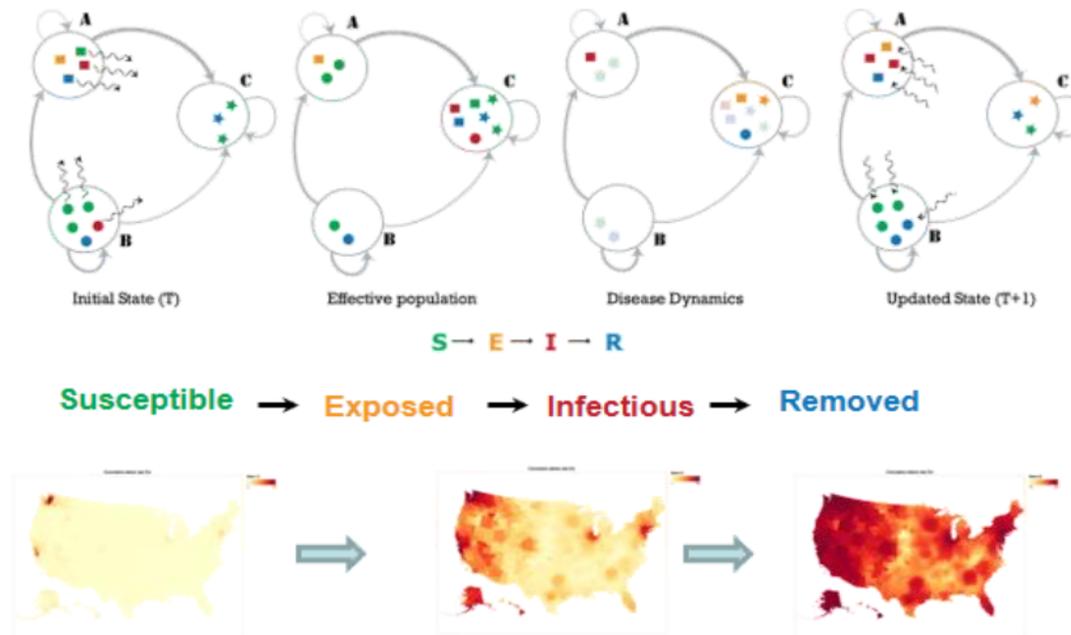
### Extended SEIR disease representation

- Includes asymptomatic infections and treatments

### Mitigations affect both disease dynamics and population interactions

### Runs fast on high-performance computers

- Ideal for calibration and optimization



Venkatramanan, Srinivasan, et al. "Optimizing spatial allocation of seasonal influenza vaccine under temporal constraints." *PLoS Computational Biology* 15.9 (2019): e1007111.

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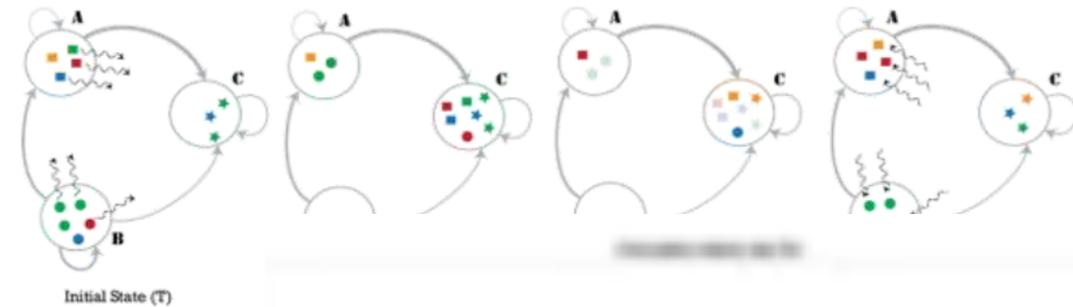
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Susceptible —

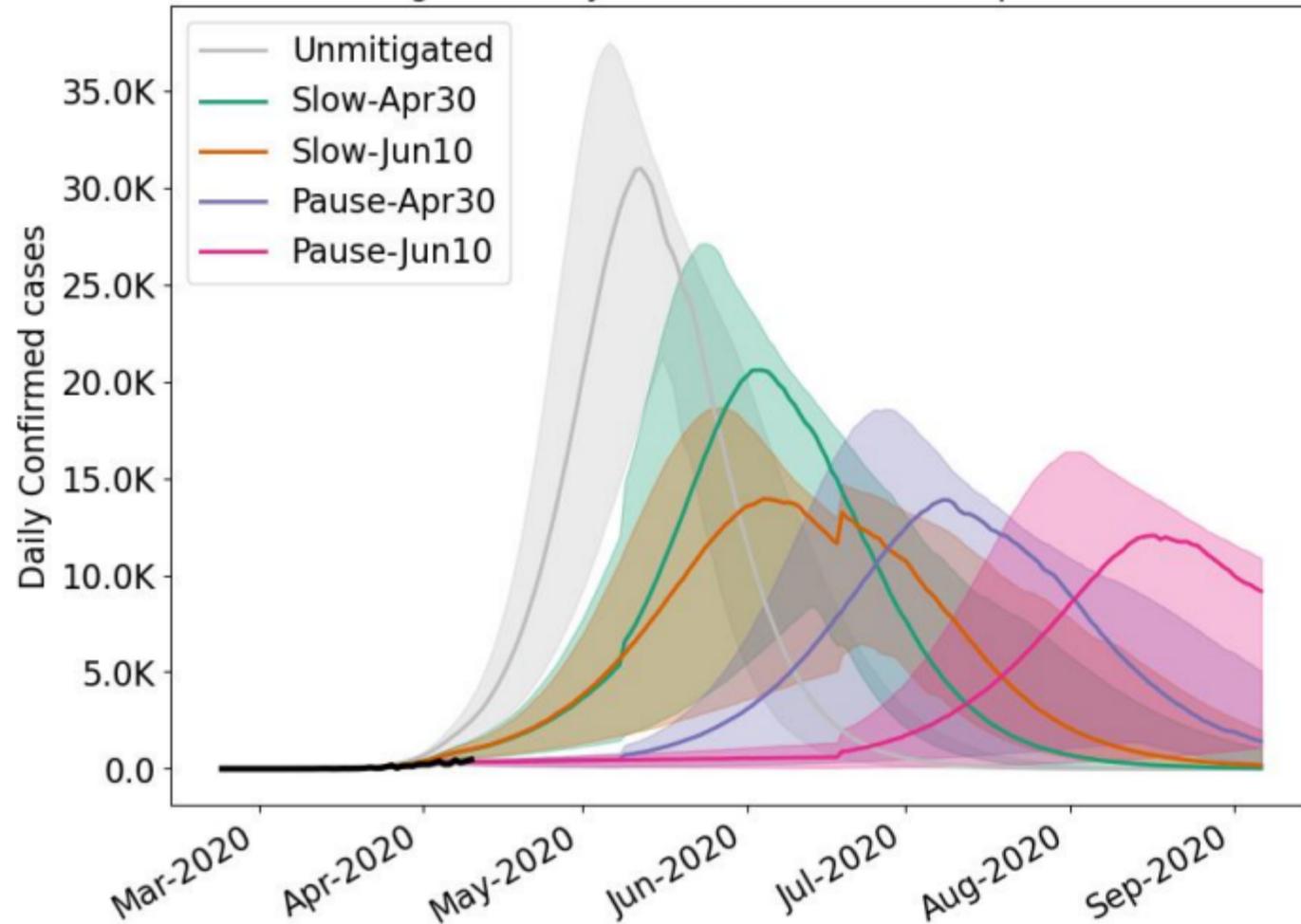


Venkatramanan, Srinivasan, et al. "Optimizing spatial allocation of seasonal influenza vaccine under uncertainty." *Journal of the Royal Society Interface* 16:1-11 (2019).



# Stay the Course: Future Depends on Policy

Virginia - Daily Confirmed cases - Comparison



Weekly New Confirmed Cases

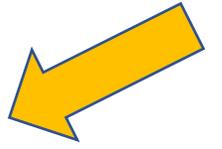
Week ending	Unmitigated	Slow Jun10	Pause Jun10
4/12/20	11,846	5,518	2,469
4/19/20	25,712	8,502	2,599
4/26/20	53,562	13,076	2,742
5/3/20	101,876	19,881	2,944
5/10/20	164,527	29,567	3,151
5/17/20	200,184	42,312	3,345
5/24/20	182,818	57,679	3,558
5/31/20	136,652	73,380	3,770
6/7/20	84,016	85,874	3,962
6/14/20	46,350	89,390	4,144
6/21/20	23,363	85,226	4,470
6/28/20	11,366	91,648	7,850

Numbers are medians of projections

# Summary

- 5.) According to every expert, and every model that I have seen, COVID-19 is still coming to Missouri/mid-Missouri.
  - COVID-19 is tracking urban centers and spreading out from there.
  - I would argue that our goal was **never** to remain disease-free forever, but to slow the spread (a) to not overwhelm our healthcare system... and also (b) to buy time, to let our science and technology “catch up” to treating the virus effectively.
- YES, we flattened the curve in Missouri (*yay!*), but:
  - Cases are now going up again (after all those crowds dispersed - Lake of the Ozarks; mass gatherings/demonstrations, etc), and
  - **there may be multiple waves.**

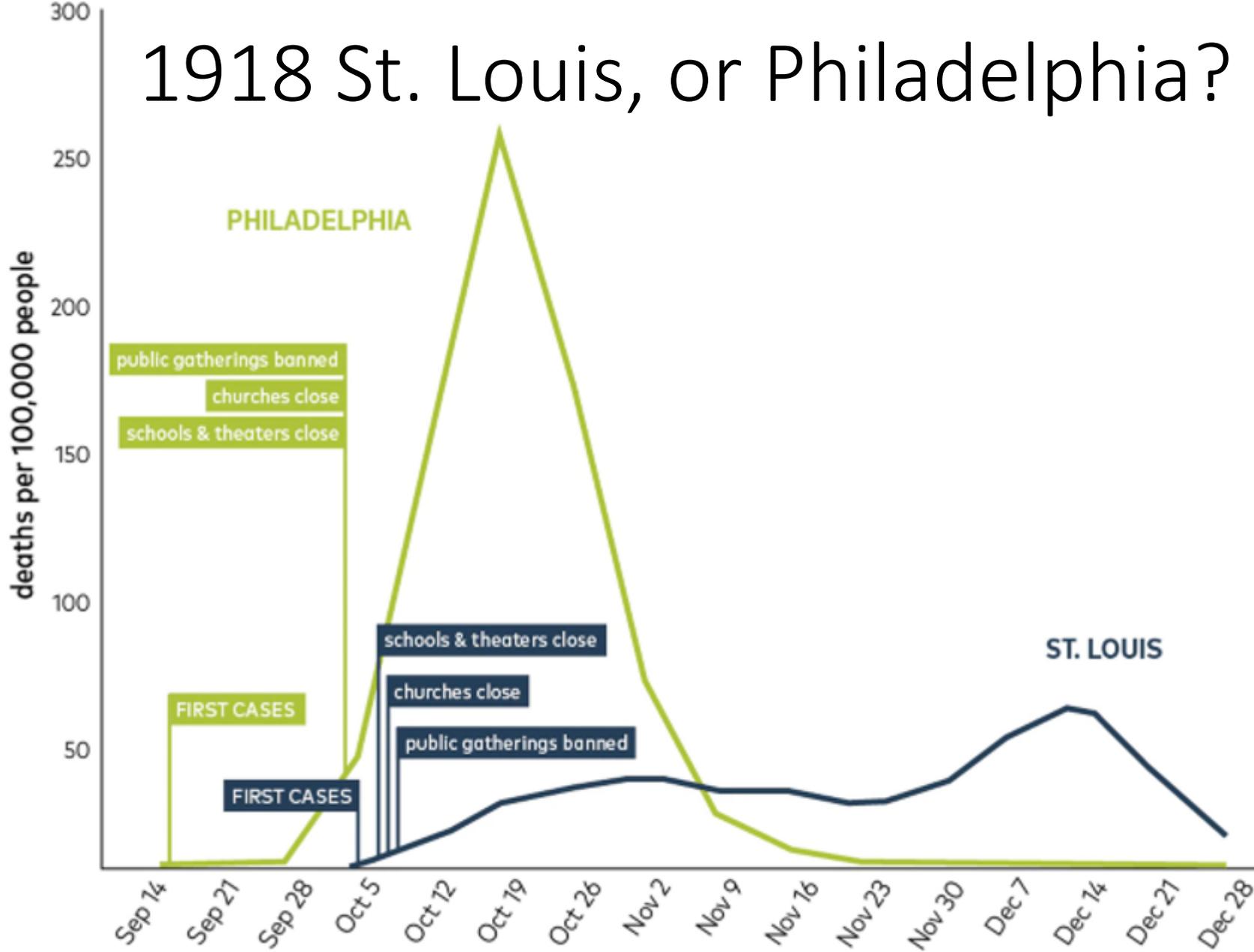
Concern: **another wave** of cases this fall?



This is speculation, but:

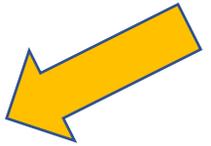
- Flu season is usually in the fall and spring
- Considerations for the fall:
  - Going back to **school** again (on buses!)
  - **Daycare** facilities open again
  - Fall **sports** again
  - (hopefully) football season again
- ...**BUT**, maybe by this fall, we'll be better about
  - **not going to work and school, when feeling sick.**
  - **good hygiene,**
  - **social and physical distancing** (staying 6 feet apart!)

# 1918 St. Louis, or Philadelphia?



1918 Flu  
Pandemic:  
*Effect of  
delaying  
preventative  
measures*

Philadelphia  
and St Louis



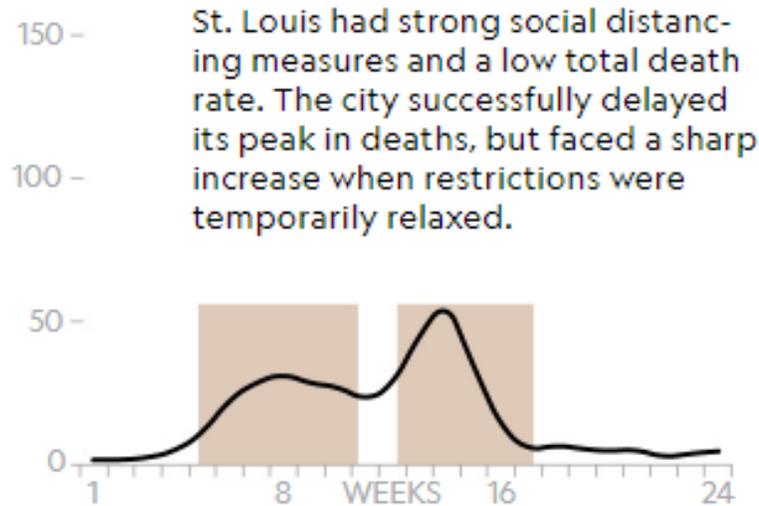
# How some cities 'flattened the curve' during the 1918 flu pandemic

Social distancing isn't a new idea—it saved thousands of American lives during the last great pandemic. Here's how it worked.

BY [NINA STROCHLIC](#) AND RILEY D. CHAMPINE

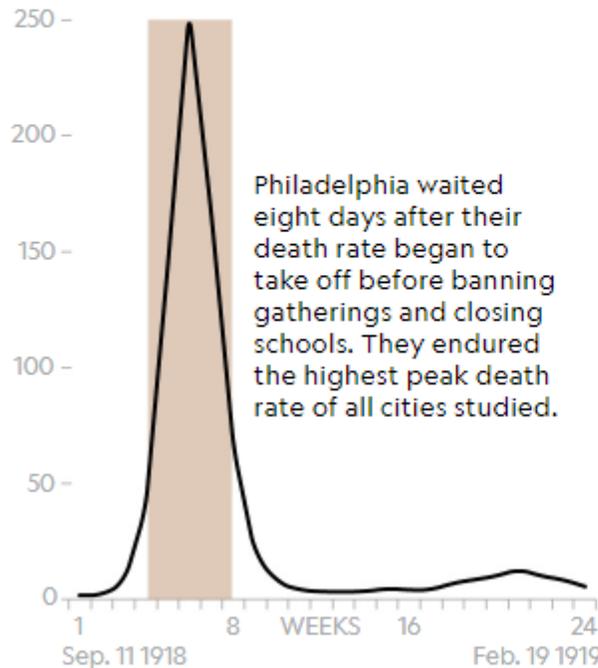
## St. Louis

**358** Deaths per 100,000



## Philadelphia

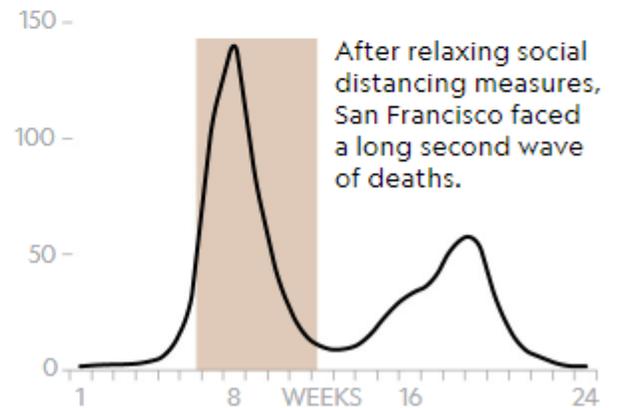
**748** Deaths per 100,000 after 24 weeks of pandemic



 Weekly deaths per 100,000 from 1918 pandemic above the expected rate  
 Duration of social distancing measures

## San Francisco

**673** Deaths per 100,000

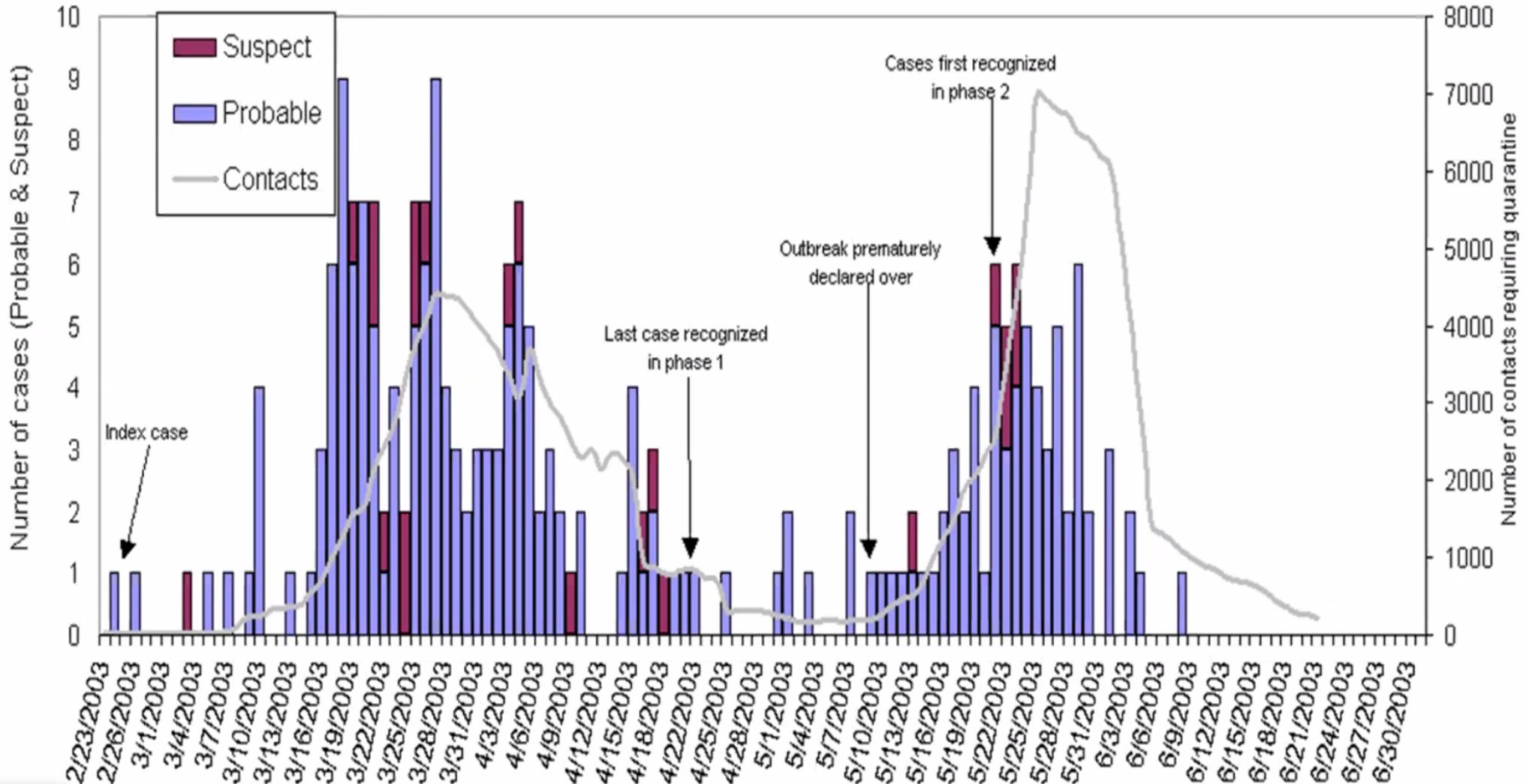


- From Mon 6/29/20 “COVID ECHO” webinar (Dr. Rex Archer):

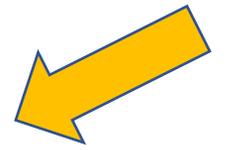
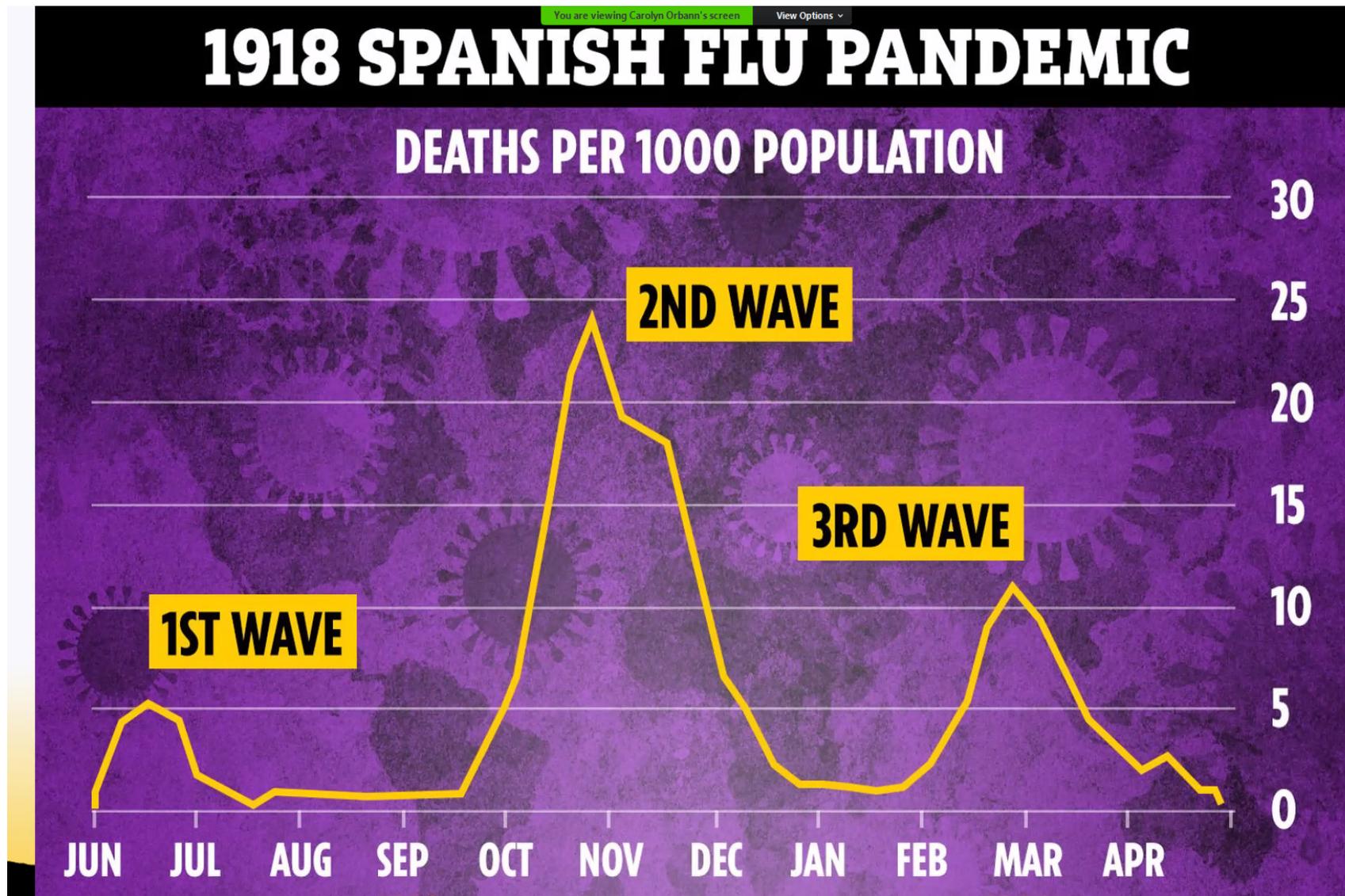


You are viewing Dr. Archer Hub's screen View Options

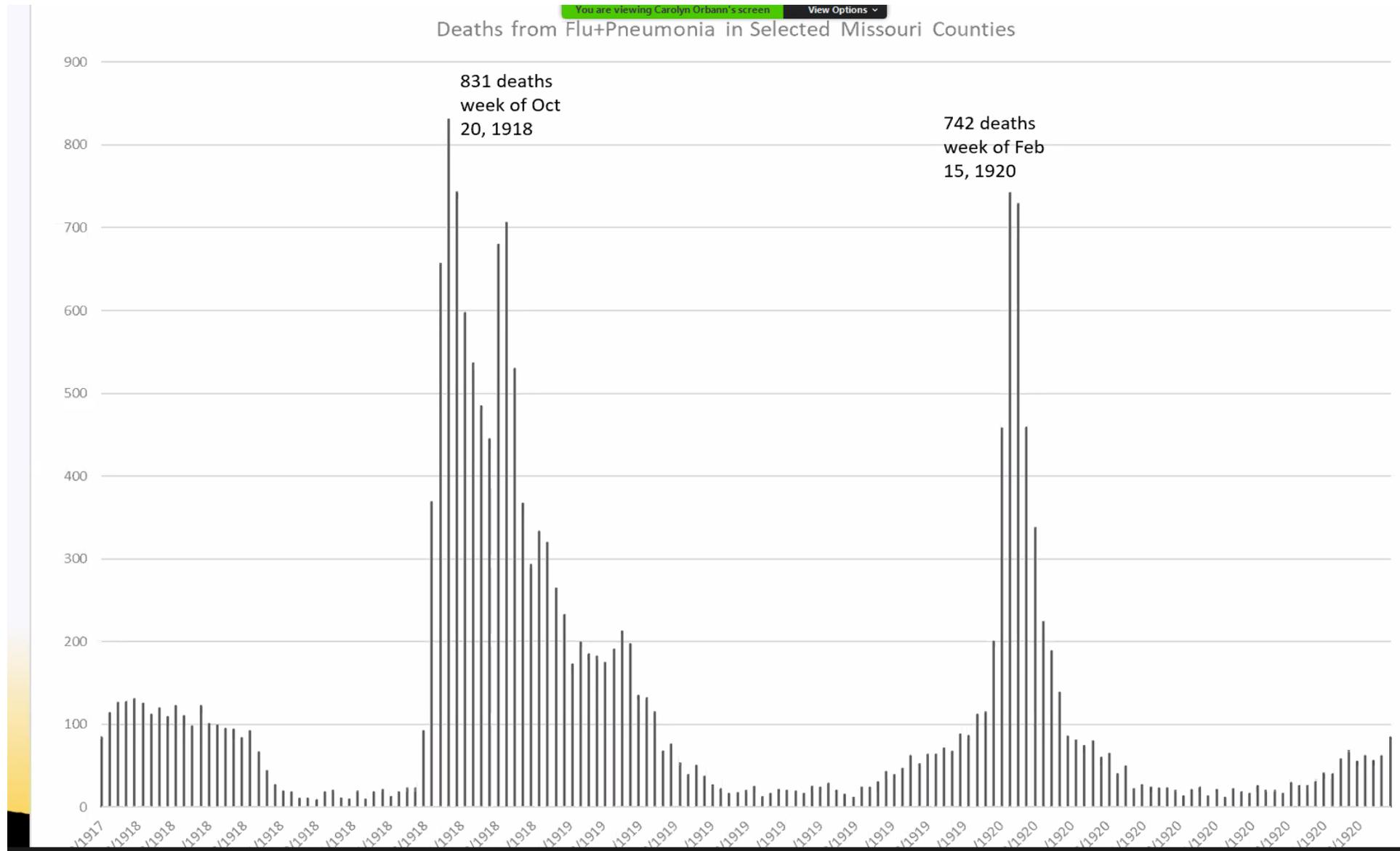
**Figure 1: Toronto SARS Cases\* Contacts Requiring Quarantine†**



- From Tue 7/28/20 presentation on 1918 flu pandemic (Dr. Carolyn Orbann)



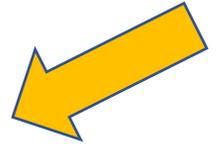
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## Findings: 1920 Echo wave

- The spring 1920 flu season caused large numbers of deaths in many areas of Missouri
- In some counties, the 1920 epidemic peak had more deaths than the second wave of the 1918 pandemic peak
  - Question: was this the same strain?



# **INCREASE** in COVID-19 cases in Boone County

- As of 8/25/20, Boone County has 2065 cases (424 active, 11 hospitalized, 6 deaths), with 881 contacts in quarantine.
- Massive increases in our **cases**, our **positivity rate**, our **doubling rate**:
  - **Cases**: we had only 216 cases on 15 June, so we have had an increase of 1849 cases (850% increase) in just 10 weeks
  - Positivity rate: Our test-positivity rate has increased dramatically, from 1-3% in early June, to 10-15% (!) over the past month
  - Doubling rate: It took approximately 60 days to get to our first 100 cases, 30 days to get to our second hundred, 14 days to get to our third hundred cases....

- COVID-19 Definitions
- Case Statistics
- Statistic Charts
- Cases by Zip Code
- Cases by Catchment Counties
- Hospital Status
- COVID-19 Information Page
- City of Columbia Press Releases
- Frequently Asked Questions

### Total Number of Cases

# 2,065

in Boone Co., MO

### Total Missouri

# 76,636

Cases

### Cases Removed from

# 1,635

Isolation in Boone Co., MO

### Active Cases in

# 424

Boone Co., MO

### Total Missouri

# ▲ 1,440

Deaths

Total Boone Co. Citizens

# 54

Who Have Been Hospitalized

### Boone Co. Citizens

# 11

Currently Hospitalized

### Death Rate (Per 100,000)

# 3.333

in Boone Co., MO

Boone County Cases in Age Group 18-22 Years Old

# 678

44 New Cases Since Yesterday

14 Day New Case Rate per 10,000

# 33.41

Boone Co., MO

Total Contacts Identified to Date

# 5,475

in Boone Co., MO

### Total COVID-19 Deaths

# ▲ 6

in Boone Co., MO

### Contacts Currently in

# 881

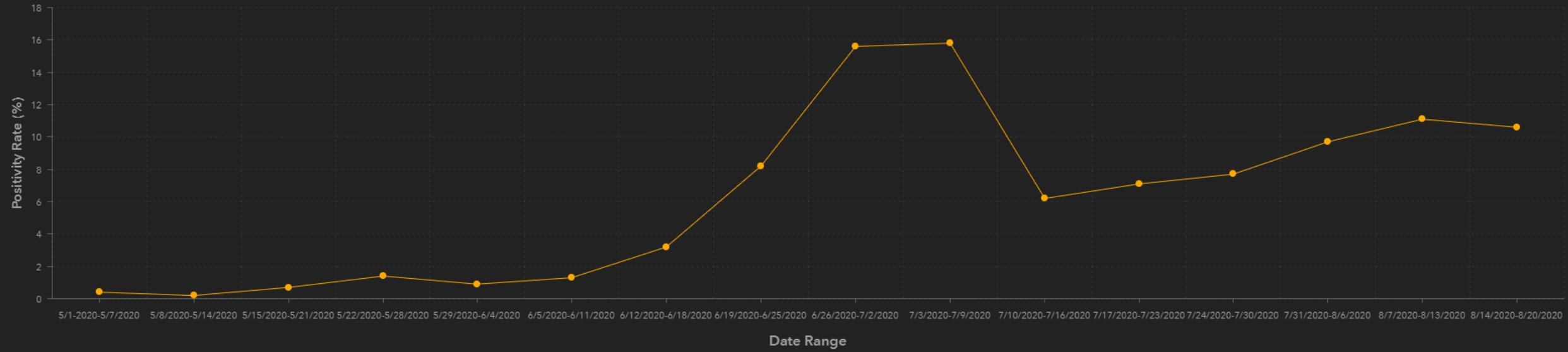
Quarantine in Boone Co., MO

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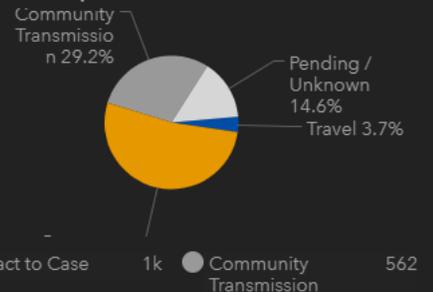
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COVID 19 Positivity Rate for Boone County Citizens



- Case Statistics (90 Days)
- Daily Cases (ALL)
- Cumulative Cases (ALL)
- Five-Day Averages
- COVID-19 Tests
- Positivity Rate

## Boone County Positive Cases by Source of Exposure



- By Source of Exposure
- By Sex
- By Age
- By Race

Race	Total Boone Co. COVID-19 Cases Per Race	Percent of Total Boone Co. COVID-19 Cases	Percent of Boone Co. General Population
White	1,401	72.9%	81.1%
Black	347	18.0%	8.8%
Asian	31	1.6%	4.5%
Two or More Races	9	0.5%	4.2%
Other / Unknown	135	7.0%	1.4%

Last Updated: 8/22/2020, 4:16:15 PM

- COVID-19 Definitions
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Total COVID 19 Tests Performed

**\* 62,116**

by Boone Co. Hospitals

Current Total Positive Case

**39**

Hospitalizations in Boone Co.\*

\*This number represents hospitalizations of people who may live in counties other than Boone.

Total Positive COVID-19 Tests

**2,823**

Performed by Boone Co. Hospitals

Boone Co. Citizens

**11**

Currently Hospitalized

Current Total Patients

**15**

in Boone Co. ICU's

Percentage of Total Positive

**4.5%**

COVID-19 Tests

Current Total Positive Patients

**5**

on a Hospital Ventilator

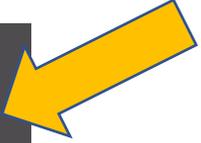
Hospital Situation	Shortage/No Issues
ICU Availability	No Issues
Stepdown Unit Availability	No Issues
Floor Bed Availability	No Issues
PPE Availability	No Issues
Staffing Availability	No Issues
Blood Product Availability	No Issues

Last Updated: 8/25/2020, 4:19:37 PM

So, let's talk (briefly) about  
“super-spreaders”

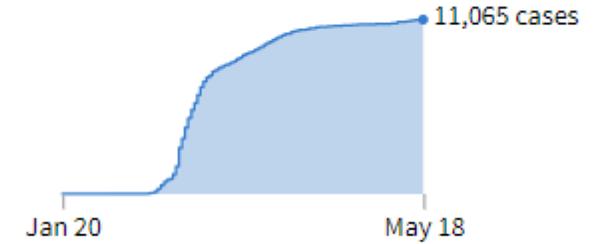
- From 4/2/20 Medicine Grand Rounds with Dr. Christelle Ilboudo @ MU:

## Superspreading events



- Mary Mallon- asymptomatic carrier of typhoid, worked as a cook and infected > 50 people in early 20th century
- SARS- 1 hospitalized patient was the source of 4 generations of transmission to 76 patients, visitors and healthcare workers
- MERS- 3 people led to secondary infections in 84, 23 and 7 people

# Modern “Super-spreaders”



- In month 1 of pandemic, only 30 individuals in S. Korea (a democracy!) were affected by COVID-19.
- It apparently took just a single individual (“patient #31”) in S Korea to infect hundreds (thousands?) of others....

**Connections between the confirmed cases**

**Case number**

**Traced contacts**

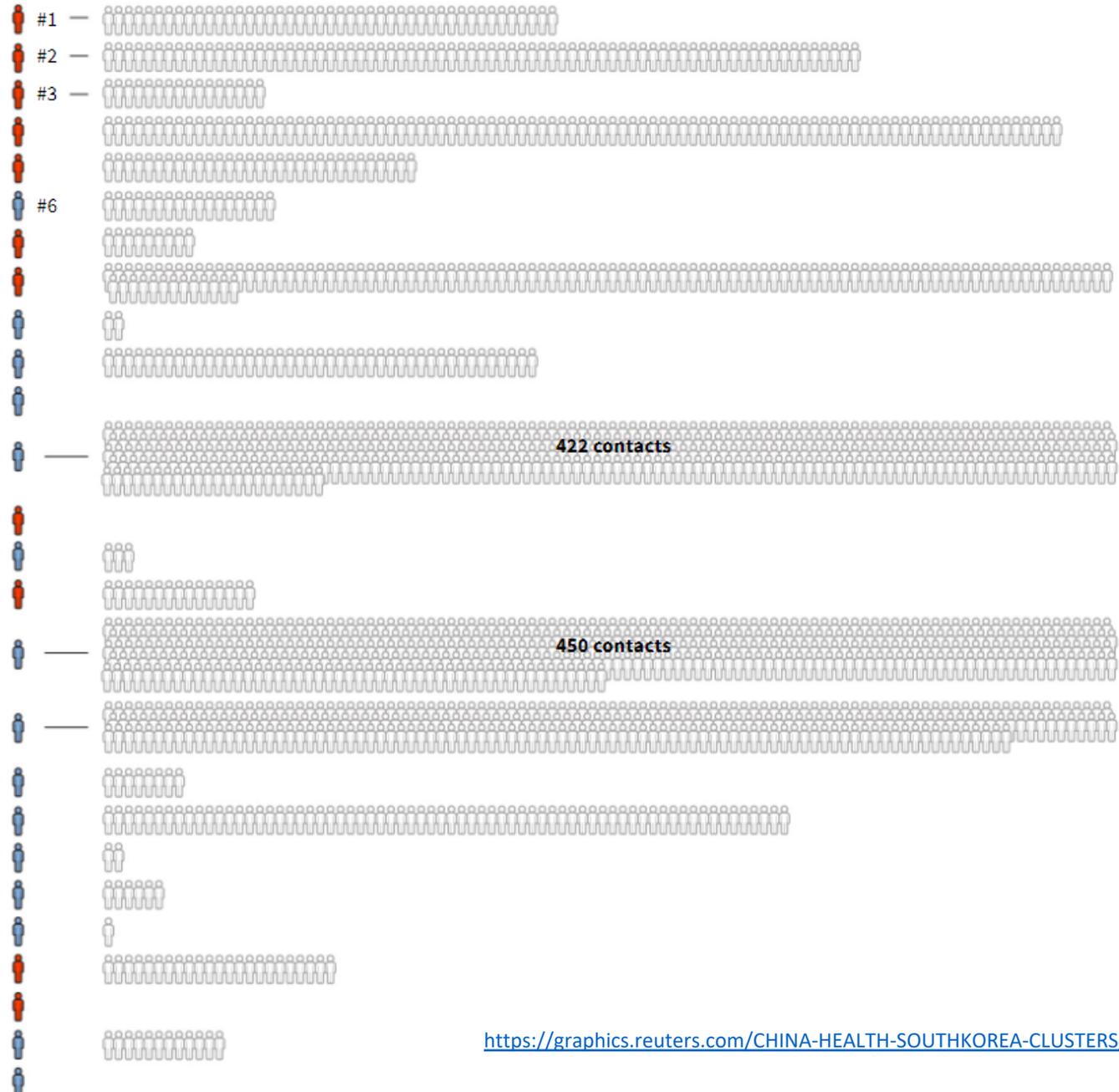
Most of the initial cases had traveled from **Wuhan**

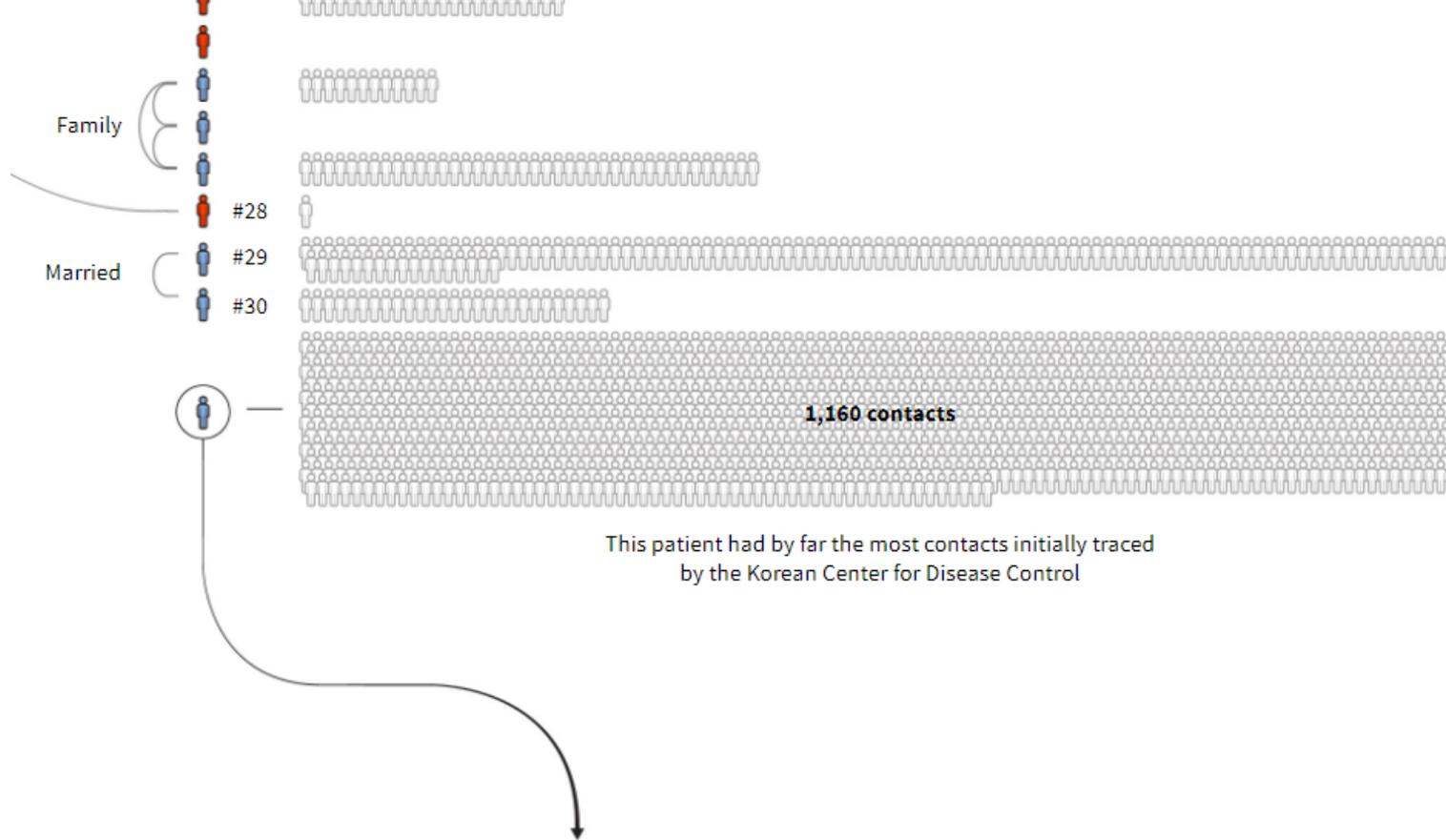
Patient #6 was the first to catch the virus **locally**. He also had contact with four other cases.

Many of the cases had some form of contact with another

Married

Family





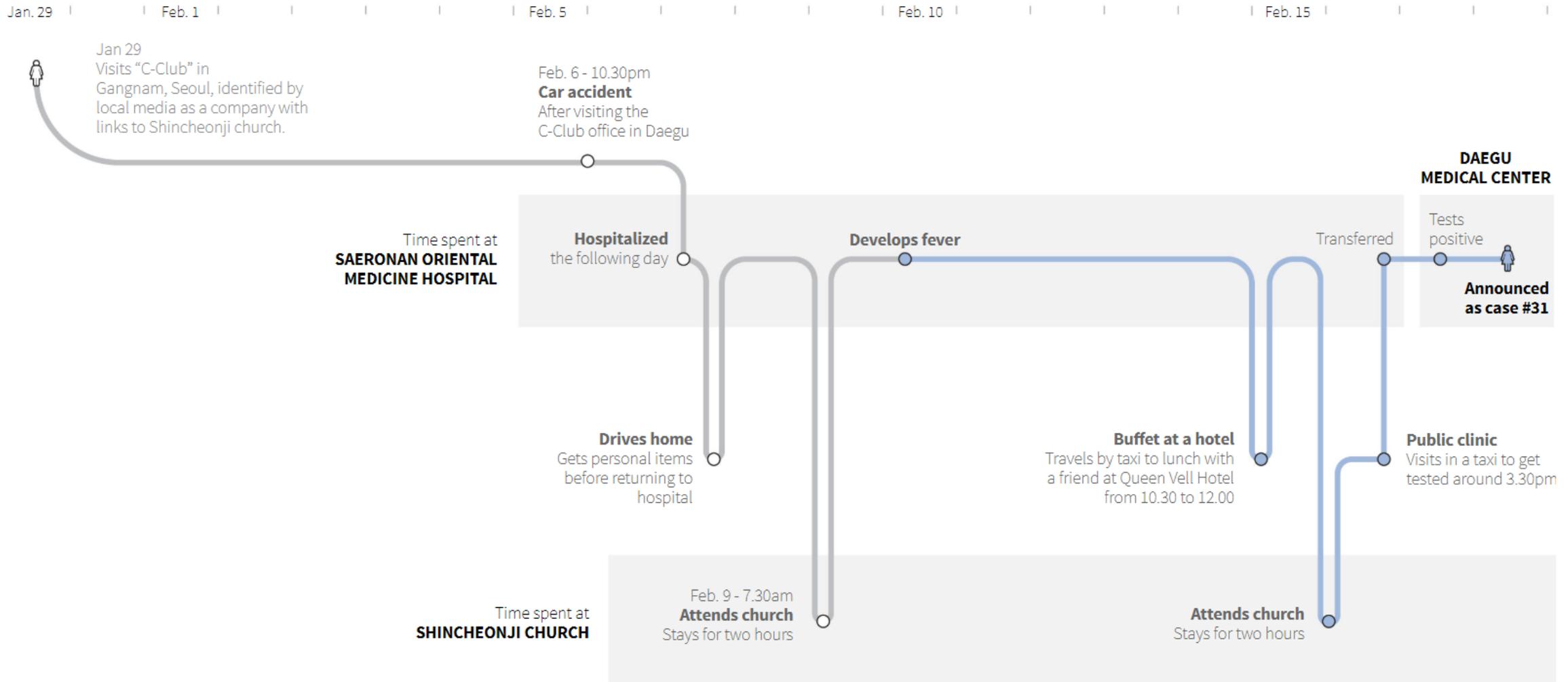
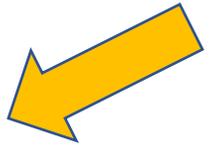
This patient had by far the most contacts initially traced by the Korean Center for Disease Control

### Patient 31

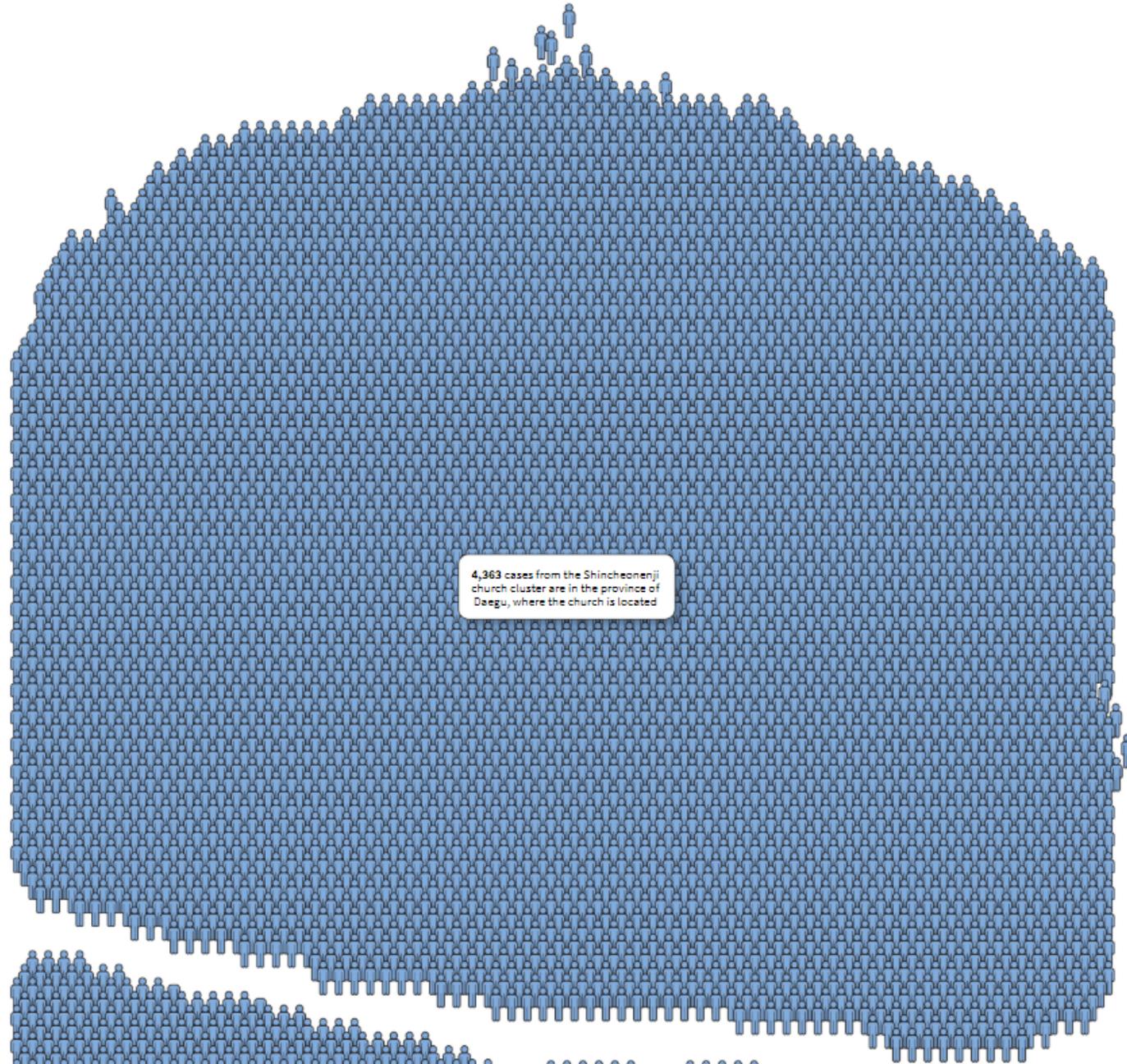
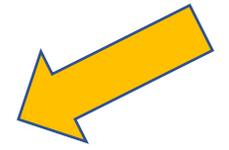
It's not clear where Patient 31 became infected with the virus, but in the days before her diagnosis, she travelled to crowded spots in Daegu, as well as in the capital Seoul. On February 6 she was in a minor traffic accident in Daegu, and checked herself into an Oriental medicine hospital. While at that hospital, she attended services at the Daegu branch of the Shincheonji Church of Jesus, on February 9 and again on February 16.

In between those visits, on February 15, doctors at the hospital said they first suggested she be tested for the coronavirus, as she had a <https://graphics.reuters.com/CHINA-HEALTH-SOUTHKOREA-CLUSTERS/0100B5G33SB/index.html>

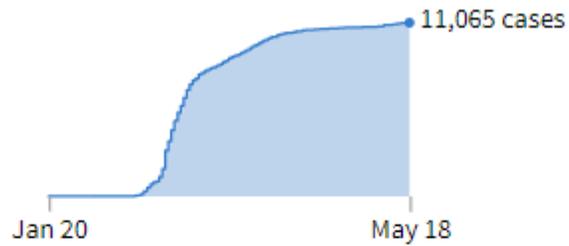
# What contact tracing looks like....



March 18  
**The Shincheonjeonji church cluster**  
5,016 infected



4,363 cases from the Shincheonjeonji church cluster are in the province of Daegu, where the church is located

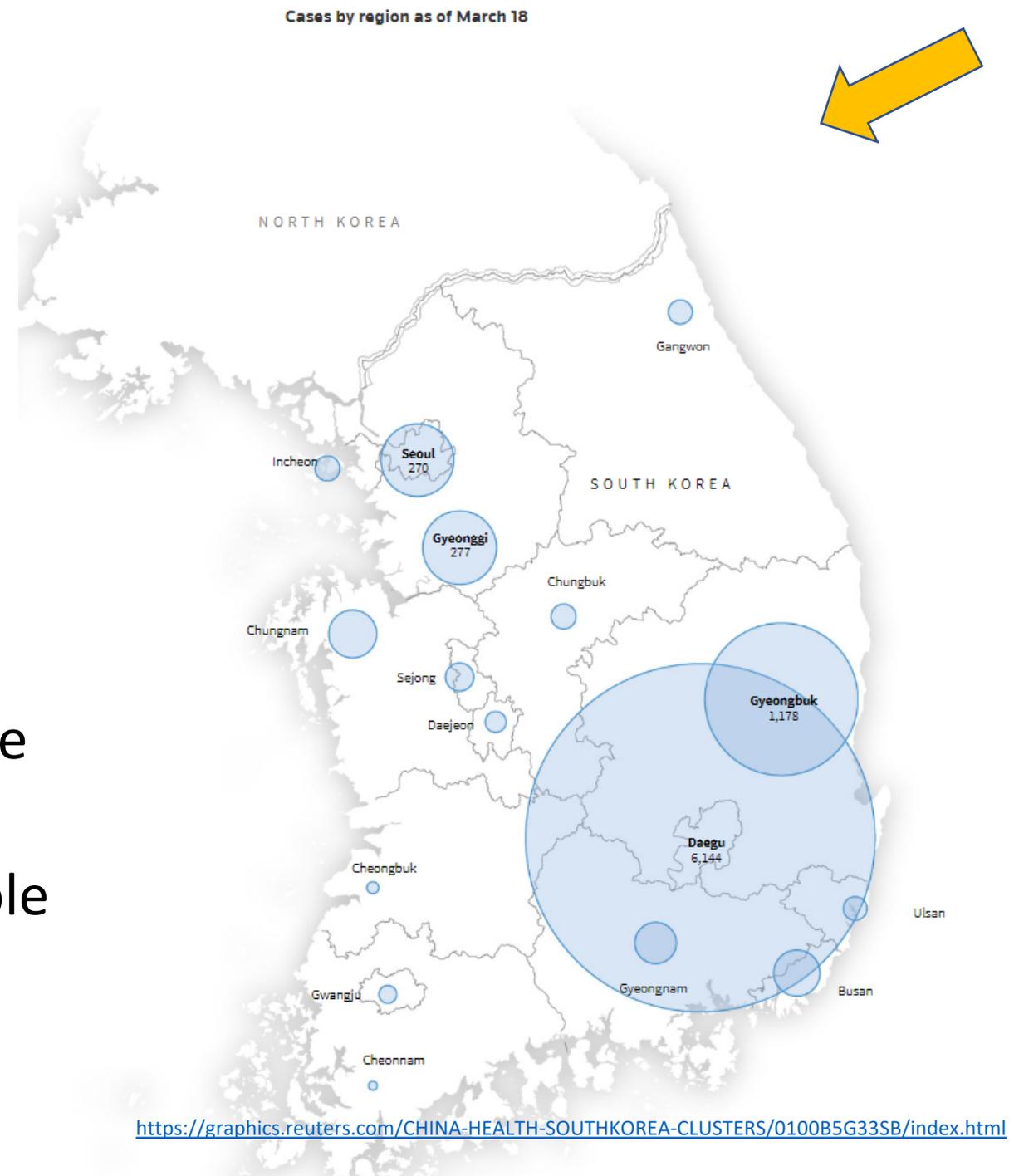


# The Korean clusters

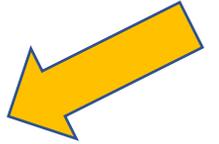
How coronavirus cases exploded in South Korean churches and hospitals

UPDATED MARCH 20, 2020

- Seoul, South Korea: 9.8 million people
  - 270 cases (3/20/20)
- Daegu, South Korea: 2.5 million people
  - 6144 cases (3/20/20)



# Superspreaders in Israel



- Using genetic sequencing of 212 viral sequences, it appears that between 1-10% of COVID-19 infected individuals may be responsible for up to 80% of secondary infections.
- “our findings underscore the ability of this virus to efficiently transmit between and within countries, as well as demonstrate the effectiveness of social distancing measures for reducing its spread.”

June 30, 2020



EARLY RELEASE

**1 in 2 COVID-19**  
patients could not  
identify a person with  
COVID-19 with whom  
they had close contact  
in the last 2 weeks\*

\*Random sample of adults with positive RT-PCR tests at  
11 U.S. academic medical centers in nine states

CDC.GOV

**Many people might be getting  
infected in their communities**

**Protect yourself and others:**

- Limit close contact with people who don't live in your household
- Wear a cloth face covering in public
- Wash hands frequently

[bit.ly/MMWR63020](https://bit.ly/MMWR63020)

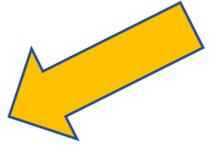
MMWR

# Outline

- (1) COVID-19: the Basics
- (2) Am I at Risk?
- (3) #FlattenTheCurve
- (4) Please don't be afraid to access medical care!
- (5) COVID-19 is Coming to mid-Missouri
- **(6) Health Recommendations**
- (7) Updates on
  - Antibody Testing
  - Health Disparities
  - Children
  - Pregnancy



# CDC recommendations (as of 6/5/20)



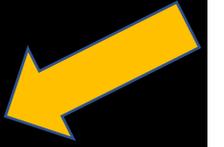
## Know How it Spreads



- There is currently no vaccine to prevent coronavirus disease 2019 (COVID-19).
- **The best way to prevent illness is to avoid being exposed to this virus.**
- The virus is thought to spread mainly from person-to-person.
  - Between people who are in close contact with one another (within about 6 feet).
  - Through respiratory droplets produced when an infected person coughs, sneezes or talks.
  - These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
  - Some recent studies have suggested that COVID-19 may be spread by people who are not showing symptoms.

Talking:  
Social distance 1.5 m

SAFER



# Running side by side

SAFER



Particle diameter [m]

$2.0 \times 10^{-4}$

$1.6 \times 10^{-4}$

$1.2 \times 10^{-4}$

$0.8 \times 10^{-4}$

$0.4 \times 10^{-4}$



# Running behind each other

LESS SAFE



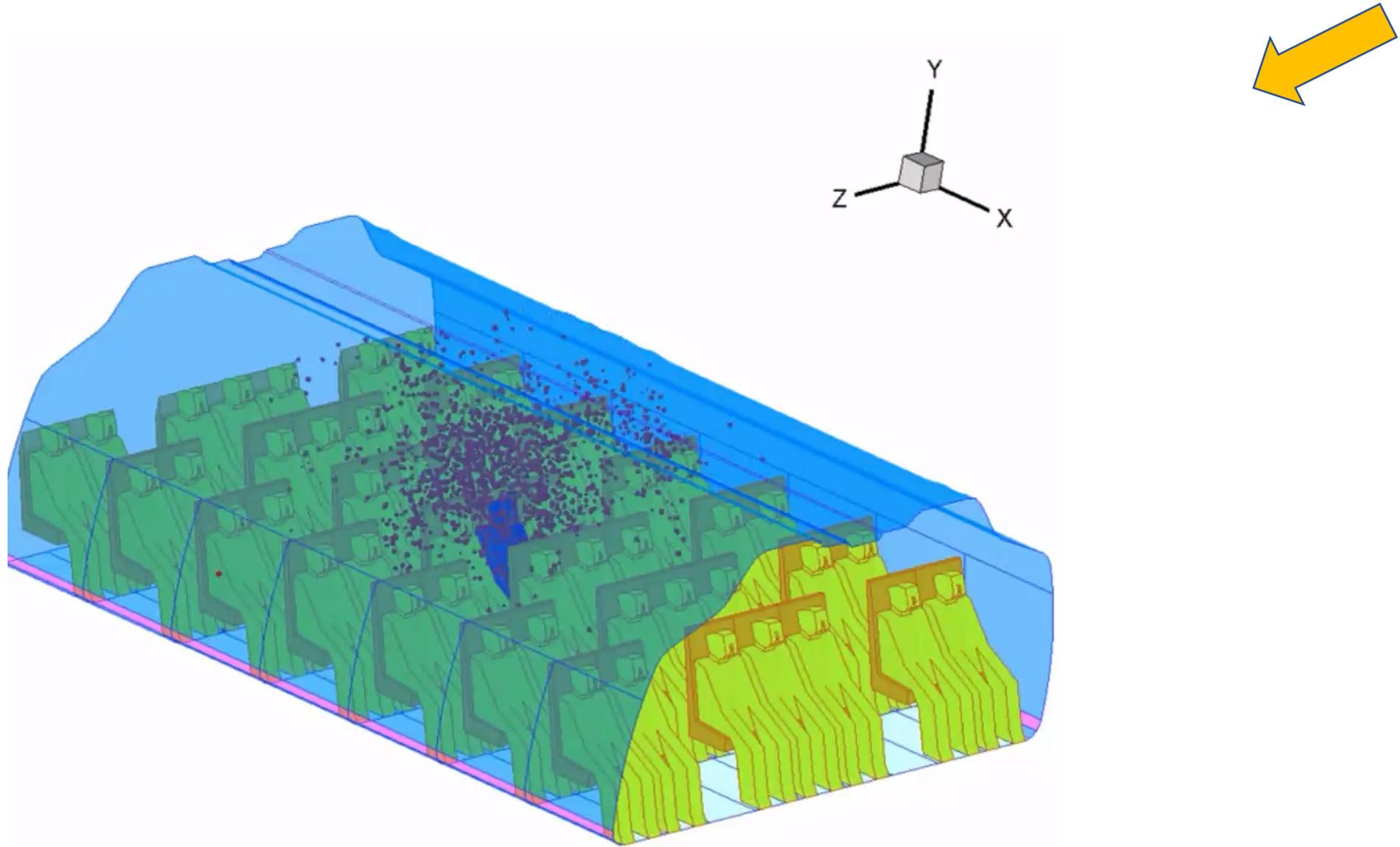
Particle diameter [m]



# Running in staggered formation

SAFER

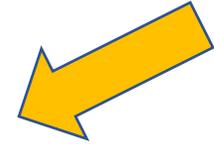




# Everyone Should



## Wash your hands often



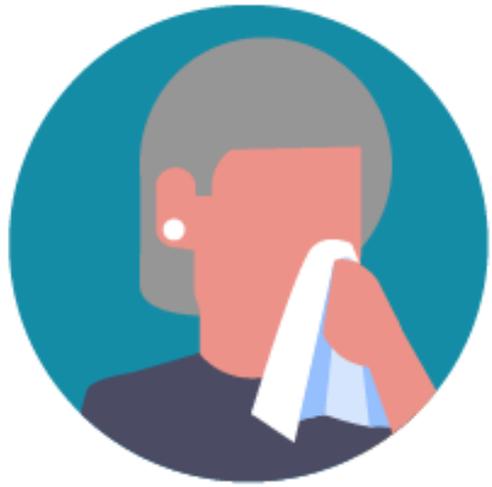
- Wash your hands often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.
- If soap and water are not readily available, **use a hand sanitizer that contains at least 60% alcohol**. Cover all surfaces of your hands and rub them together until they feel dry.
- **Avoid touching your eyes, nose, and mouth** with unwashed hands.



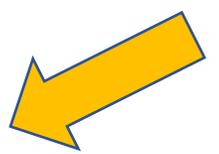
## Avoid close contact



- **Avoid close contact with people who are sick, even inside your home.** If possible, maintain 6 feet between the person who is sick and other household members.
- **Put distance between yourself and other people outside of your home.**
  - Remember that some people without symptoms may be able to spread virus.
  - Stay at least 6 feet (about 2 arms' length) from other people.
  - Do not gather in groups.
  - Stay out of crowded places and avoid mass gatherings.
  - Keeping distance from others is especially important for people who are at higher risk of getting very sick.



## Cover coughs and sneezes



- If you are in a private setting and do not have on your cloth face covering, remember to **always cover your mouth and nose** with a tissue when you cough or sneeze or use the inside of your elbow.
- **Throw used tissues** in the trash.
- Immediately **wash your hands** with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol.

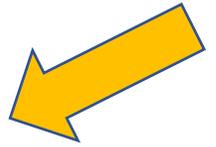


## Clean and disinfect



- **Clean AND disinfect frequently touched surfaces daily.** This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks.
- **If surfaces are dirty, clean them.** Use detergent or soap and water prior to disinfection.
- **Then, use a household disinfectant.** Most common [EPA-registered household disinfectant](#)  will work.

# How long does COVID last on surfaces?



Cardboard  
24 hours



Stainless Steel  
24-48 hours



Plastic  
48-72 hours

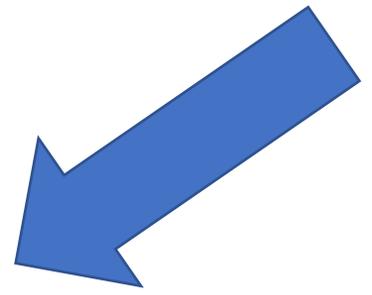




## Cover your mouth and nose with a cloth face cover when around others

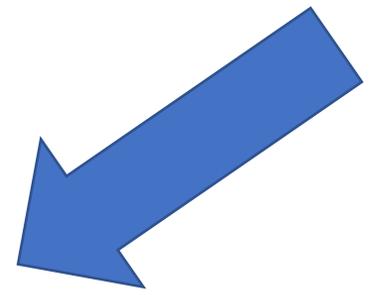
- You could spread COVID-19 to others even if you do not feel sick.
- Everyone should wear a cloth face cover when they have to go out in public, for example to the grocery store or to pick up other necessities.
  - Cloth face coverings should not be placed on young children under age 2, anyone who has trouble breathing, or is unconscious, incapacitated or otherwise unable to remove the mask without assistance.
- The cloth face cover is meant to protect other people in case you are infected.
- Do NOT use a facemask meant for a healthcare worker.
- Continue to keep about 6 feet between yourself and others. The cloth face cover is not a substitute for social distancing.

# When NOT to wear a mask



- If it's going to make you feel comfortable going to a Mardi Gras parade. Masks are no substitute for physical distancing (6 feet apart!)
- If it's wet or soiled. (Throw it in the laundry, and get a fresh one!).
- If you get the inside of the mask dirty.
- If you get claustrophobic, get anxious, have breathing difficulties, or otherwise cannot wear a mask safely....
  - *(BUT please seek medical advice to address such issues!).*

# Those who need NOT wear a mask (CDC)



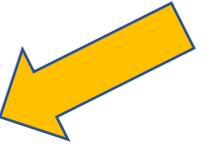
- *Deaf individuals who may need to lip-read*
- *Younger children who may be unable to wear a cloth face covering properly*
- *If engaged in activities where cloth covering will become wet (like with swimming)*
- *If engaged in high-intensity activities (like with running)*
- *If working in settings which increase the risk of heat-related illnesses or safety concerns (like straps getting caught in machinery)*

- From Fri 4/24/20 webinar, Medical Society of Virginia / VA Dept of Health:

## Asymptomatic (or Pre-symptomatic) Spread of SARS-CoV-2 Virus

- 2-3 days of pre-symptomatic spread possible in some patients
- Some children and some elderly people are asymptomatic during entire infection course
  - Many infected but asymptomatic people found in recent LTCF studies
- Prolonged PCR-positivity in some pts after symptoms resolve
  - Studies ongoing to understand how related to infectiousness

# Summary of CDC recommendations



- The best way to prevent illness is to avoid being exposed:
  - **Clean** your hands often.
  - **Avoid** touching your eyes, nose, mouth with unwashed hands.
  - **Avoid** close contact with people who are sick.
  - Cover coughs and sneezes.
  - Cover your mouth and nose with a cloth face cover when in public, and around others.
- Social / physical distancing: stay **6 feet apart**, avoid crowds

# Outline

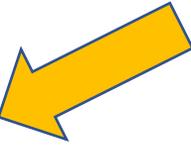
- (1) COVID-19: the Basics
- (2) Am I at Risk?
- (3) #FlattenTheCurve
- (4) Please don't be afraid to access medical care!
- (5) COVID-19 is Coming to mid-Missouri
- (6) Health Recommendations
- **(7) Updates on**
  - **Antibody Testing**
  - Health Disparities
  - Children
  - Pregnancy



Please **BEWARE** of COVID-19 “antibody testing” 

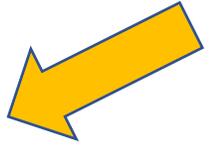
- It is appealing to think that we can do an antibody test, to prove that you have been exposed to a disease and are now “immune.”
  - For my infertility or preconception patients, I check for antibodies against chicken pox and German measles, prior to conception.
- As of August 2020, **there is no FDA-approved COVID-19 antibody test for diagnostic purposes.**

Please **BEWARE** of COVID-19 “antibody testing”



- Antibodies to COVID-19 do **\*not\*** show evidence of long-term (durable) immunity.
  - The problem is our *science*. Antibodies:
    - Do **NOT** prove immunity (antibodies to HIV don't protect you!)
    - Do **NOT** necessarily “neutralize” the virus
    - In other diseases, requires a certain level (“titer”) of antibodies to confer protection.
    - In other diseases (like hepatitis B), may require a series of vaccines, or “booster” shots
- We are still learning about COVID-19; we do not know any of this science (yet).
- As of August 2020, **there is no FDA-approved COVID-19 antibody test for diagnostic purposes.**

Please **BEWARE** of COVID-19 “antibody testing”



- If our local or state health department offers you a *free* test for COVID-19 antibodies, that’s great.
- If someone tries to **SELL** you an antibody test to “prove” that you’re immune and “safe” from COVID-19, **STAY AWAY**.
  - *(consider getting their information and reporting them to the state attorney general, consumer protection division)*

- From Tue 6/2/20 BCMS webinar, “Updates and Hot Topics”

# Updates in Immunity

The New York Times

## The World Is Still Far From Herd Immunity for Coronavirus

By Nadja Popovich and Margot Sanger-Katz May 28, 2020

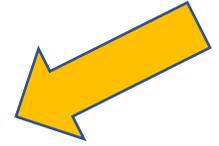
- Herd immunity
  - Threshold may differ from place to place depending upon population density and social interaction
  - On average, at LEAST 60% of the population must be immune to provide some level of effective herd immunity
  - All this ASSUMES immunity develops if a person has been infected
  - Risk of acquiring infection after exposure remains the same, but exposure is less when adequate herd immunity is present
  - Of course we do not have evidence of protective immunity yet in persons who have recovered from Covid 19
  - This article discusses positive antibody tests in different areas

# Outline

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  - Children
  - Pregnancy



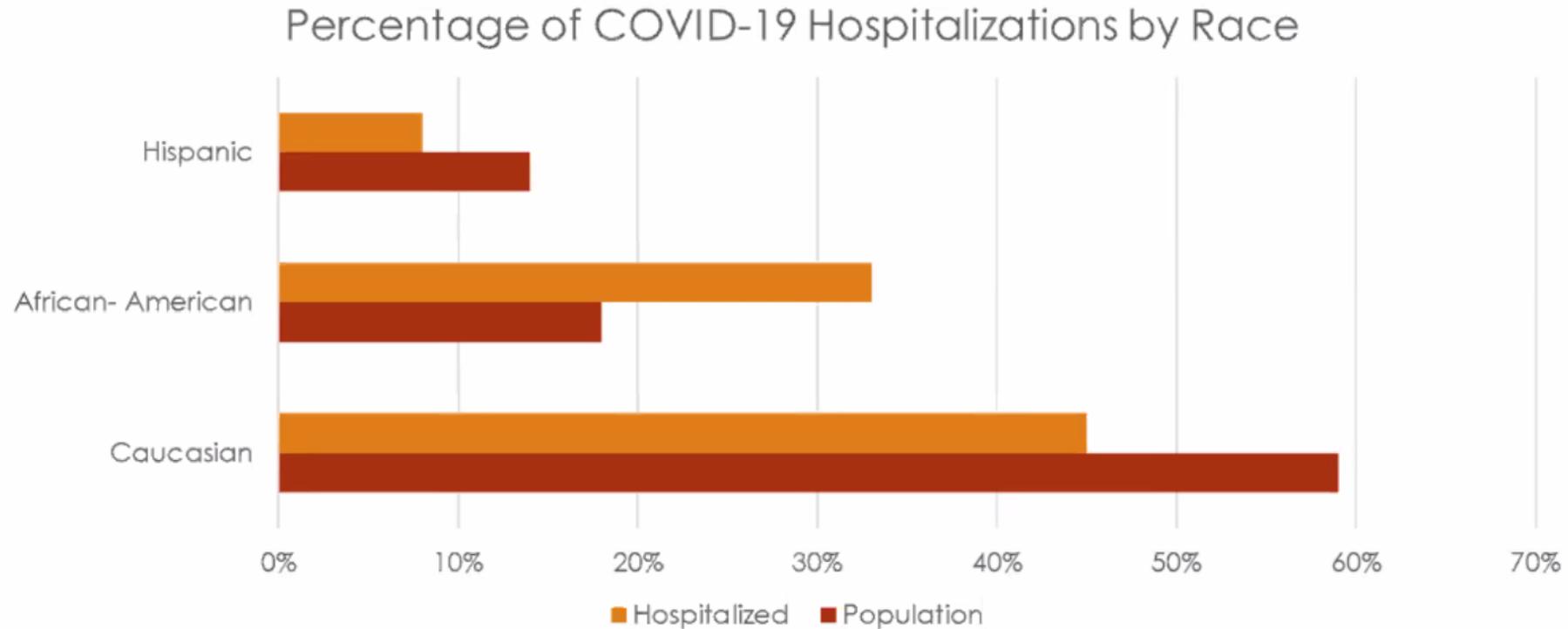
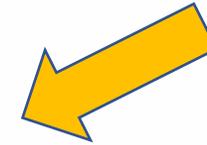
# Health disparities and COVID-19



- COVID-19 is having a disproportionate impact on African-Americans (and Hispanic Americans, and Native Americans)
  - Chronic conditions
  - Pre-Existing health disparities
  - Worsened by social inequities including:
    - Housing
    - Transportation
    - Employment

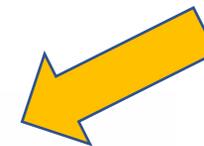
- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”

# COVID-NET

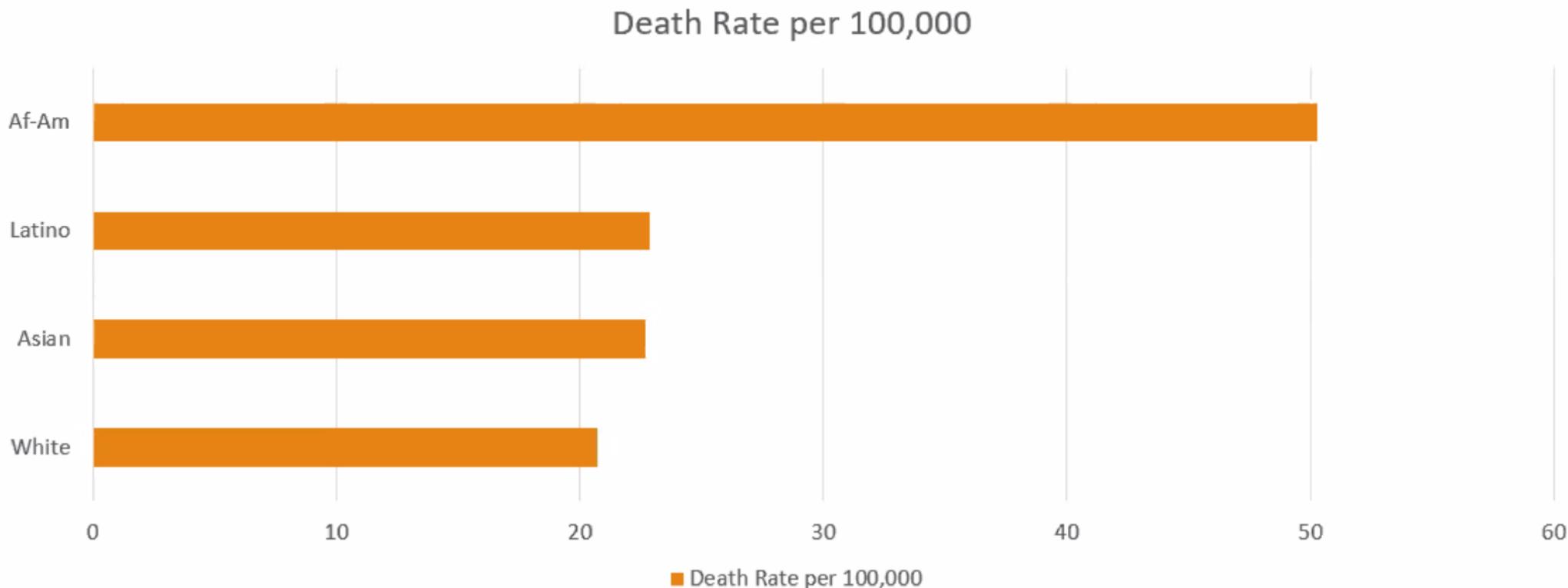


Hospitalizations, March 1-30, 2020

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”

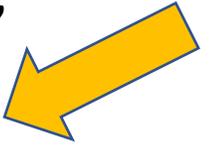


# Deaths From COVID -19 in the US

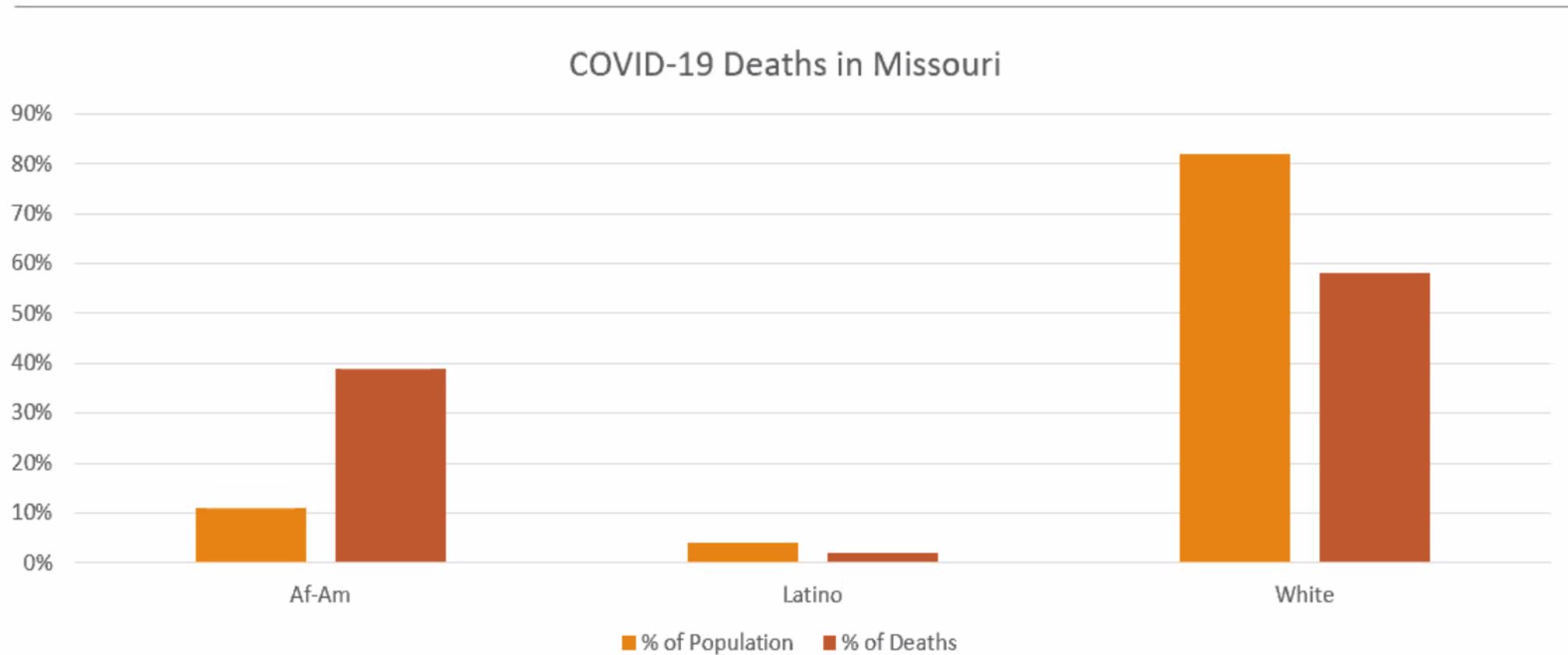


\*American Public Media Research Lab

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”

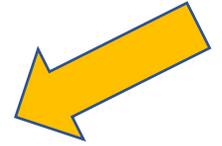


# COVID-19 in Missouri



- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”

## COVID-19 in Boone County, MO



	<u>Total Boone Co. COVID-19 Cases Per Race</u>	<u>Percent of Total Boone Co. COVID-19 Cases</u>	<u>Percent of Boone Co. General Population</u>
White	88	75.2%	81.1%
Black	23	20.5% (5.3%)	8.8%
Asian	3	2.6%	4.5%
Two or More Races	1	0.9%	4.2%
Other / Unknown	1	0.9%	1.4

\*Boone County, MO COVID-19 Information Hub

Just 4 weeks previously, African-Americans were 5.3% of our COVID-19 cases....

<u>Race</u>	<u>Total Boone Co. COVID-19 Cases Per Race</u>	<u>Percent of Total Boone Co. COVID-19 Cases</u>	<u>Percent of Boone Co. General Population</u>
White	1,401	72.9%	81.1%
Black	347	18.0%	8.8%
Asian	31	1.6%	4.5%
Two or More Races	9	0.5%	4.2%
Other / Unknown	135	7.0%	1.4%

Last Updated: 8/22/2020, 4:16:15 PM

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”

# Health Disparities

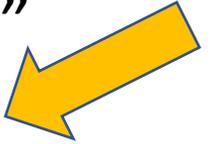
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## COVID-NET Data

Most common chronic conditions in patients on admission:

- Diabetes
- Cardiovascular disease; including hypertension
- Chronic Lung Disease

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”



# Health Disparities

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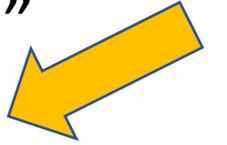
## **Diabetes**

- 4.9 million African-American adults, or 18.7% of all African Americans  $\geq$  20 years of age, have diagnosed or undiagnosed diabetes, compared to 7.1% of non-Hispanic white Americans.
- The risk of diabetes is 77% higher among African Americans than among non-Hispanic white Americans.

## **Cardiovascular Disease**

- African American adults are 40 percent more likely to have high blood pressure, and less likely than their non-Hispanic white counterparts to have their blood pressure under control.
- In 2017, African Americans were 20 percent more likely to die from heart disease than non-Hispanic whites.

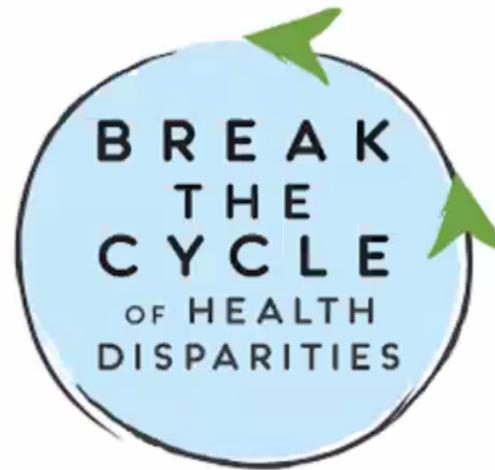
- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”



# Health Disparities and Social Inequities

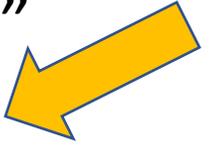
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Social Inequities



Health Disparities

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”



## Social Inequities

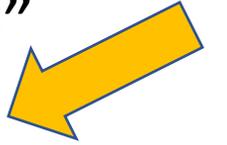
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Housing

Transportation

Employment

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”

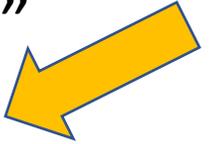


## Public Housing and Urban Dwellings

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- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”



## Social Inequities

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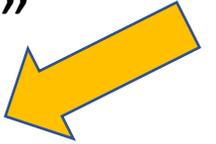
### **Housing**

- Across all public housing, about 45% of residents are black, 32% are white and a little over 20% are Hispanic.
- Space constraints, overcrowding and issues with water, sewage and waste collection make self-quarantine and good hygiene impractical and often increases the risk of spread

### **Transportation**

- African American workers are 3 times as likely than whites to not have a private vehicle at home.
- These disparities are heightened in certain metropolitan areas

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”



# Social Inequities

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## Employment

- Based on the Bureau of Labor Statistics, members of most minority groups are disproportionately represented in lower paying jobs (i.e. health technicians, correctional Officers, security personnel, housekeeping/Janitorial services, etc.)
- Many of these positions were deemed “essential” during the Stay at Home Orders.

- From Tue 5/26/20 BCMS webinar on “Health Disparities and COVID-19”



# What Can We Do Now?

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Acknowledgement

Access to Care/Testing

- Reach out to patients from vulnerable populations
- Make sure chronic conditions are under control
- Encourage patients to seek medical care if they have symptoms
- Provide opportunities for TESTING

Provide Community Resources

Provide Information/Knowledge about COVID to patients

Collect Data

# Good news on Access to Care!

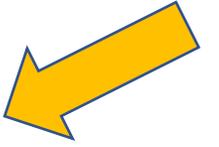
- “Amendment 2” (Medicaid Expansion) passed as an Amendment to our Missouri State Constitution, by a margin of 53.3-46.7% on 8/4/20
  - More federal tax dollars will return to the State of Missouri
  - Of those who will become eligible, nearly 80% are in a household with at least one worker.
  - Good for the economy: creating jobs, less uncompensated care by hospitals, helping to keep rural hospitals open, maintaining our physician workforce
- If you want to learn more, or if you’d like to get involved in the next steps, please come and get involved with your local and state medical societies!
  - Membership in BCMS and MSMA is \*free\* for medical students.

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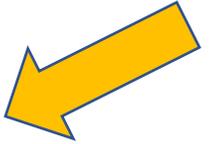


# Children and COVID-19



- Of 345 pediatric cases of COVID-19, 23% (80) had at least one underlying condition
  - Chronic lung disease (including asthma) (40)
  - Cardiovascular disease (25)
  - Immunosuppression (10)
- Of 295 pediatric cases (where hospitalization status and underlying conditions was available)
  - 28 of 37 (77%) hospitalized (6 ICU) with  $\geq 1$  underlying condition
  - 30 of 259 (12%) not hospitalized with underlying conditions
- 3 deaths

# Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection in Children and Adolescents: A Systematic Review



- Systematic review of 18 studies with 1065 participants (<10 yrs: 444 patients, 10-19 yrs: 553 with confirmed infection)
- All articles reflected research performed in China, except for 1 clinical case in Singapore
- Most pediatric patients presented with fever, dry cough, and fatigue or were asymptomatic
- 1 infant presented with pneumonia, complicated by shock and kidney failure
- Most pediatric patients were hospitalized
- Symptomatic children received mainly supportive care
- No deaths were reported in the age range of 0 to 9 years

Castagnoli et al. JAMA Pediatrics. Published online Apr 22, 2020

# Missouri COVID-19 Dashboard: The Spread of COVID-19 in Missouri

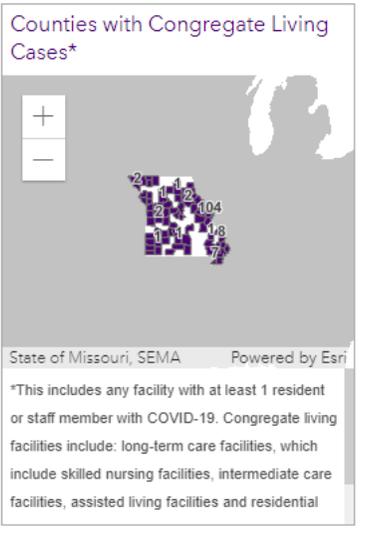
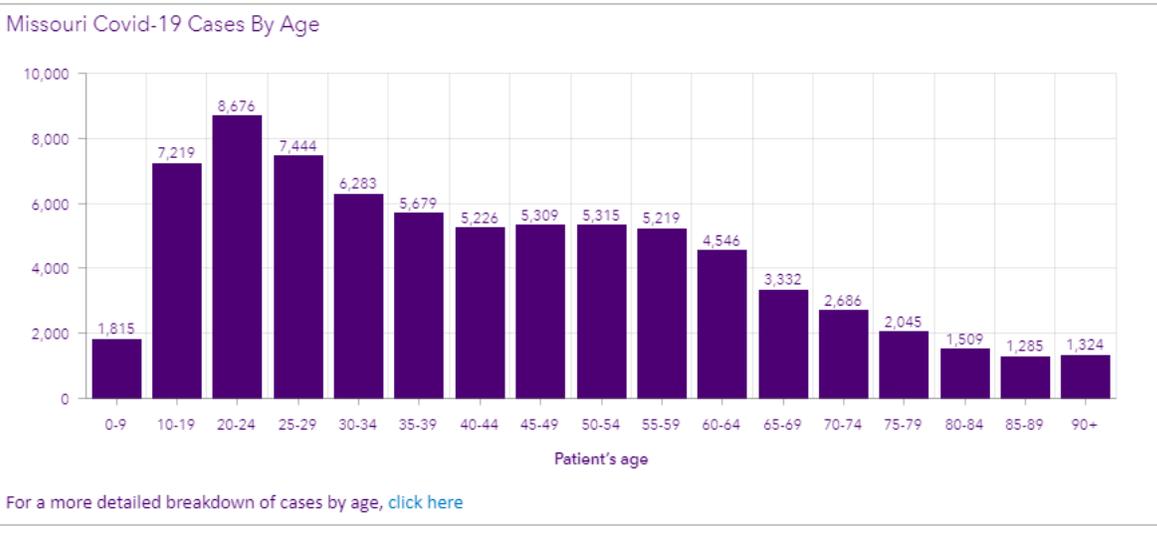
- COVID - Overview
- Cases - Demographics
- Cases - County
- Testing - PCR
- Testing - Serology
- Deaths
- Hospitalizations

Average Age of a COVID-19 Patient

# 43

Last 7 Days: Average Age of a COVID-19 Patient

# 41

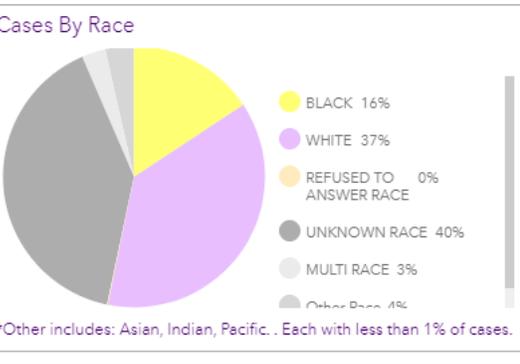
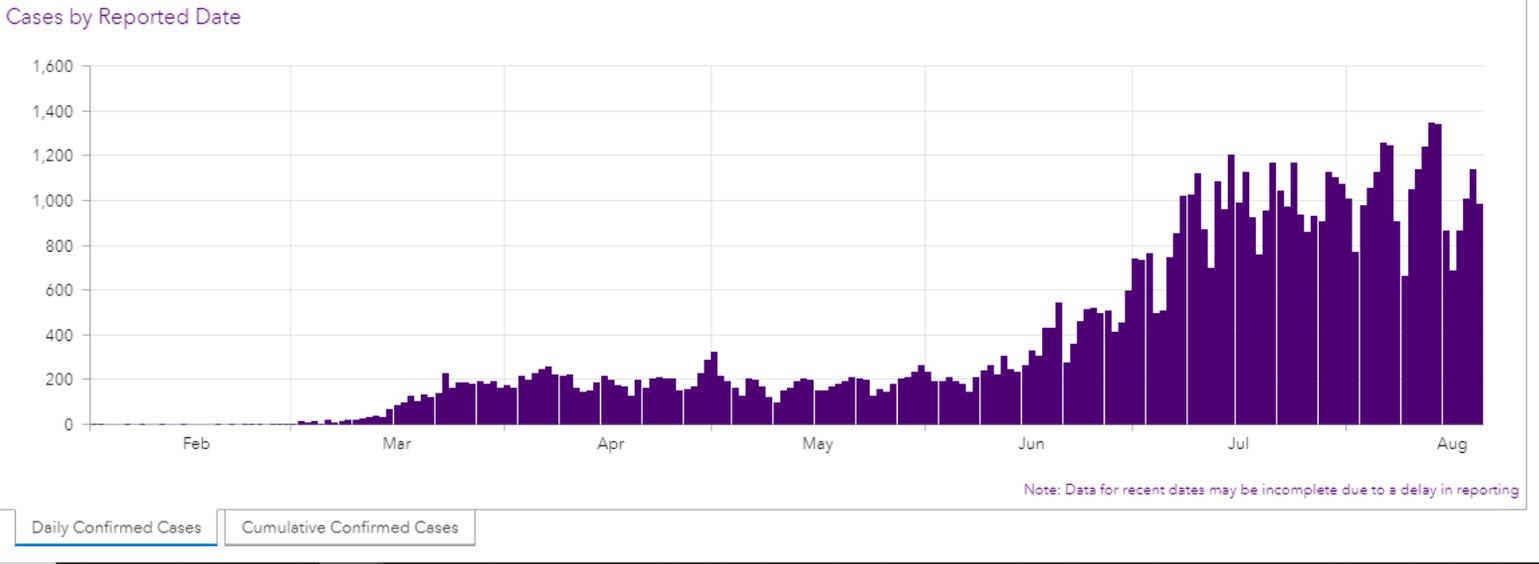


See [documentation](#) for more information.  
Page last updated 8/23/2020

24 Hour Change in Statewide Cases (rate per 100,000 pop.)

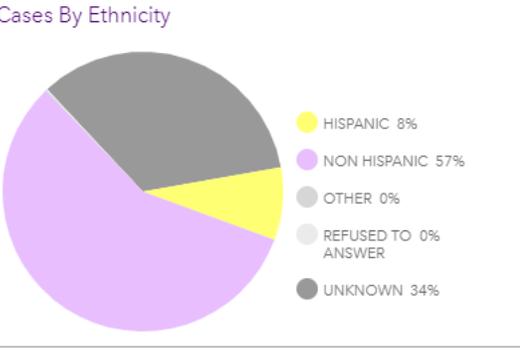
# 1.3%

\*Data reflects 72 hour delay



7 Day Change in Statewide Cases (rate per 100,000 pop.)

# 8.6%



### Cases By Biological Sex

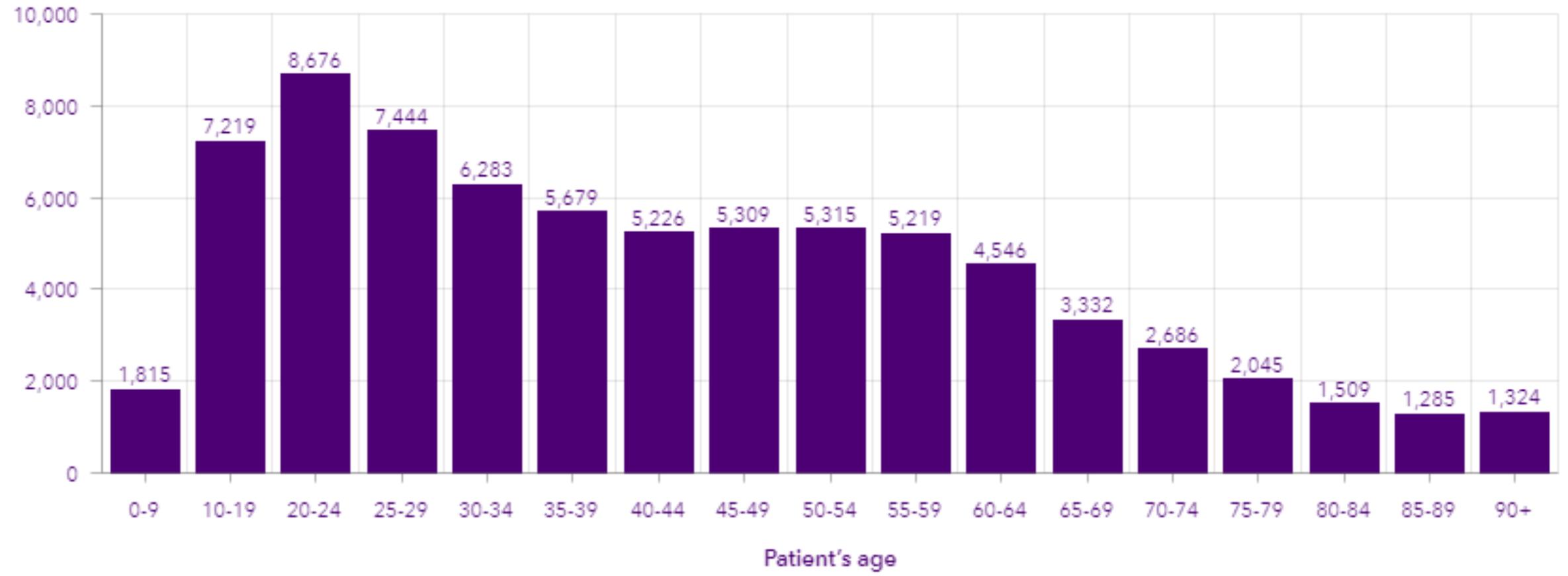
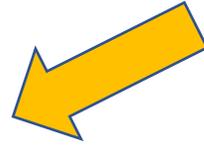
Male: 33,478

Female: 39,319

Unknown\*\*: 2,278

\*\*Some results do not initially contain this information, it will be updated as it is received

# Missouri Covid-19 Cases By Age



For a more detailed breakdown of cases by age, [click here](#)

# Cases by Age

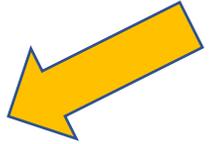
DHSS Home » Healthy Living » Health Conditions & Diseases » Communicable Diseases » COVID-19 » cases-by-age

Select Language   
 Powered by 

Age	Number of Cases
0-9	1815
10-19	7219
20	1863
21	1835
22	1698
23	1671
24	1609
25	1528
26	1546
27	1490
28	1448
29	1432
30	1360
31	1266
32	1267
33	1187
34	1203
35	1170

35	1170	59	983
36	1085	60	982
37	1160	61	931
38	1128	62	885
39	1136	63	894
40	1159	64	854
41	988	65	727
42	1041	66	726
43	1028	67	630
44	1010	68	635
45	1063	69	614
46	990	70	596
47	1061	71	561
48	1070	72	571
49	1125	73	519
50	1081	74	439
51	1100	75	417
52	1051	76	407
53	1075	77	464
54	1008	78	390
55	1076	79	367
56	1024	80-84	1509
57	1080	85-89	1285
58	1056	90+	1324
59	983	Unknown	163

# Multisystem Inflammatory Syndrome in Children (MIS-C) Associated with Coronavirus Disease 2019 (COVID-19)



Distributed via the CDC Health Alert Network  
May 14, 2020, 4:45 PM ET  
CDCHAN-00432

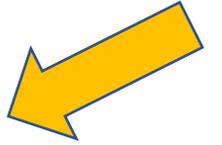
## Summary

The Centers for Disease Control and Prevention (CDC) is providing 1) background information on several cases of a recently reported multisystem inflammatory syndrome in children (MIS-C) associated with coronavirus disease 2019 (COVID-19); and 2) a case definition for this syndrome. CDC recommends healthcare providers report any patient who meets the case definition to local, state, and territorial health departments to enhance knowledge of risk factors, pathogenesis, clinical course, and treatment of this syndrome.

# Multisystem Inflammatory Syndrome in Children (MIS-C)

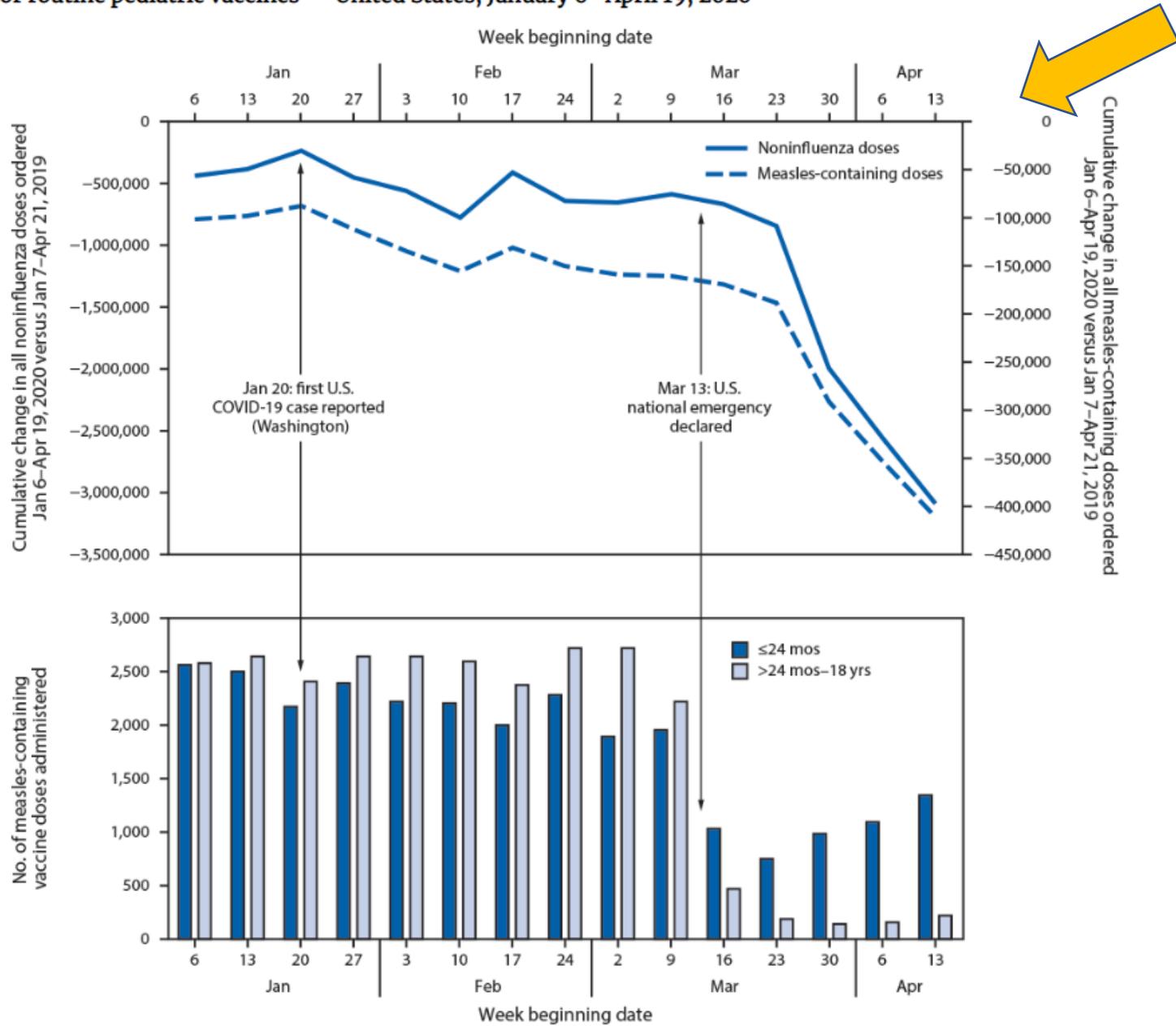
- Early May 2020, New York Dept of Health received reports of children with multisystem inflammatory syndrome
- April 16 – May 4<sup>th</sup> 2020: 15 patients aged 2-15 years were hospitalized (many requiring ICU)
- As of May 12<sup>th</sup>, 102 patients (including NYC)
- Currently unknown if multisystem inflammatory syndrome is specific to children or if it also occurs in adults
- There is limited information currently available about risk factors, pathogenesis, clinical course, and treatment for MIS-C

# Collateral impact of COVID-19 on children



- Stressors of sudden job losses
- Loss of childcare
- New parents with lack of social support and help
- Availability of therapies and support for children with special health care needs
  
- (temporary infant formula shortages)
  
- **Decrease in vaccinations**

**FIGURE. Weekly changes in Vaccines for Children Program (VFC) provider orders\* and Vaccine Safety Datalink (VSD) doses administered† for routine pediatric vaccines — United States, January 6–April 19, 2020** 

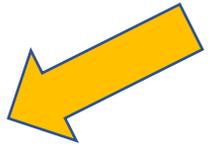


\* VFC data represent the difference in cumulative doses of VFC-funded noninfluenza and measles-containing vaccines ordered by health care providers at weekly intervals between Jan 7–Apr 21, 2019, and Jan 6–Apr 19, 2020.

# Effects of the COVID-19 Pandemic on Routine Pediatric Vaccine Ordering and Administration — United States, 2020

Weekly / May 15, 2020 / 69(19);591–593

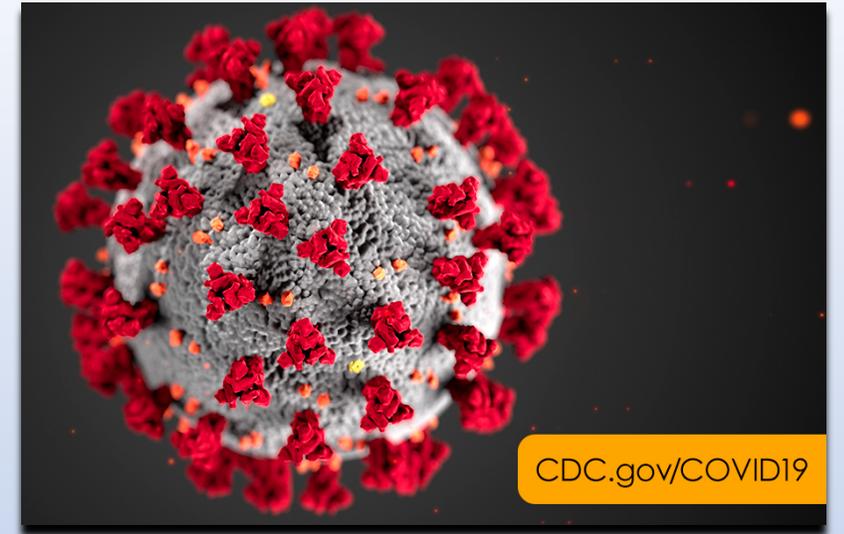
On May 8, 2020, this report was posted online as an MMWR Early Release.



- From mid-March to mid-April, doctors in the Vaccines For Children program ordered about
  - 2.5 million fewer doses of all routine non-influenza vaccines
  - 250,000 fewer doses of measles-containing vaccines compared to the same period in 2019.

# Outline

- (1) COVID-19: the Basics
- (2) Am I at Risk?
- (3) #FlattenTheCurve
- (4) Please don't be afraid to access medical care!
- (5) COVID-19 is Coming to mid-Missouri
- (6) Health Recommendations
- (7) Updates on
  - Antibody Testing
  - Health Disparities
  - Children
  - **Pregnancy**



**Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–June 7, 2020**

Sascha Ellington, PhD<sup>1</sup>; Penelope Strid, MPH<sup>1</sup>; Van T. Tong, MPH<sup>1</sup>; Kate Woodworth, MD<sup>1</sup>; Romeo R. Galang, MD<sup>1</sup>; Laura D. Zambrano, PhD<sup>1</sup>; John Nahabedian, MS<sup>1</sup>; Kayla Anderson, PhD<sup>1</sup>; Suzanne M. Gilboa, PhD<sup>1</sup>

- Among women of reproductive age with COVID-19, pregnant women (compared to NON-pregnant women) are:
  - more likely to be hospitalized
  - at increased risk for ICU admission
  - at increased risk of mechanical ventilation

# Updated CDC recommendations (6/25/20)

## If You Are Pregnant, Breastfeeding, or Caring for Young Children

Updated June 25, 2020

[Other Languages](#) ▾

[Print Page](#)



### Protect yourself and your family from COVID-19



Based on what we know at this time, **pregnant people might be at an increased risk for severe illness from COVID-19** compared to non-pregnant people. Additionally, there may be an increased risk of adverse pregnancy outcomes, such as preterm birth, among pregnant people with COVID-19. Therefore, if you are pregnant, be mindful about reducing your risk of getting sick. If you are caring for children, you can teach them [everyday steps](#) (such as proper [handwashing](#)) to help them stay healthy and, in turn, help protect yourself and your family.

#### On This Page

[Protect yourself and your family from COVID-19](#)

[COVID-19 and pregnancy considerations](#)

[Newborns born to mothers with suspected or confirmed COVID-19](#)

[COVID-19 and Breastfeeding](#)

[COVID-19 and children](#)

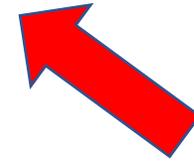
[Face shields for newborns and infants](#)

[Cloth face coverings for children, parents, and other caregivers](#)

[Safe sleep for infants during the COVID-19 pandemic](#)

# Updated CDC recommendations (6/25/20)

## Protect yourself and your family from COVID-19



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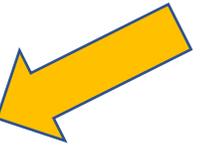
Additionally, there may be an increased risk of adverse pregnancy outcomes, such as preterm birth, among pregnant people with COVID-19. Therefore, if you are pregnant, be mindful about reducing your risk of getting sick. If you are caring for children, you can teach them [everyday steps](#) (such as proper [handwashing](#)) to help them stay healthy and, in turn, help protect yourself and your family.

• <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

Question: is it safe to conceive, in a time of COVID/coronavirus pandemic?



# Summary of unknowns regarding COVID-19 and pregnancy/conception

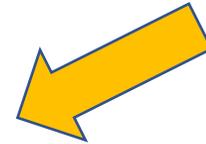


- **Unknown** risk of birth defects
- **Unknown** impact on pregnancy
  - ?preterm delivery, fetal growth restriction
- **Unknown** risk of vertical transmission (mother-to-baby)

“Fertility Treatments in the Age of COVID-19 – what we know and don’t know”  
at <https://www.medpagetoday.com/infectiousdisease/covid19/86019>

# NO DATA on pregnancies when COVID-19 is acquired in early pregnancy!

- *The American Society for Reproductive Medicine (ASRM) stated (on 3/17/20):*
  - *"Currently, there are **no data** on the risk of pregnancy complications when COVID-19 is acquired during the first or early second trimester of pregnancy.*
  - *Because:*
    - ***The virus only emerged in China in Dec 2019,***
    - ***Only emerged in the USA in Feb 2020.***
- *Other known coronavirus infections during pregnancy, such as SARS, have been associated with spontaneous miscarriage, preterm delivery, and intrauterine growth restriction (Wong et al, 2004).*



- From 3/19/20 webinar, Society for Maternal Fetal Medicine (high-risk Ob)

## Similar viruses in Pregnancy

### • SARS-CoV:

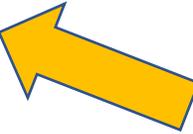
- Largest series of 12 pregnancies
- Complications: ARDS, DIC, ARF, Bacterial pneumonia, Sepsis, Mechanical ventilation, Sab (4/7)
- 25% fatality

### • MERS-CoV:

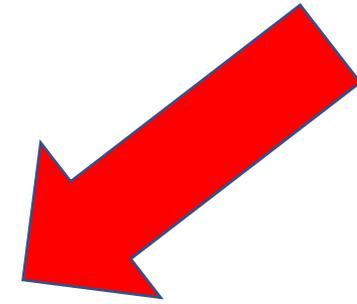
- 13 case reports
- 2 asymptomatic
- IUFD, preterm delivery
- 23% fatality



VectorStock.com/1050098



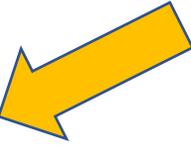
# Pregnancy & coronavirus epidemics



Characteristic	SARS	MERS	COVID-19
Maternal complications			
-- mechanical ventilation	35%	41%	<b>4%</b>
-- mortality	18%	25%	<b>&lt;1%</b>
Fetal complications			
-- miscarriage	25%	18%	<b>2%</b>
-- IUGR	13%	9%	<b>7%</b>
-- preterm birth	25%	27%	<b>32%</b>
-- neonatal death	0%	9%	<b>1%</b>



# Preterm birth risk? Fetal growth restriction?



- Several reports suggesting that women with COVID-19 *\*may\** be at increased risk of:
  - **preterm labor** or preterm birth, and
  - **fetal growth restriction**

What I ask all of my preconception/infertility patients:



- It is also important to note the **potential risk of a pregnancy-associated complication**, specifically a risk that preterm labor or severe pre-eclampsia (or other pregnancy complications) may require a *hospitalization*
  - and that (*despite the best efforts of our hospitals to keep you safe!*) such a hospitalization ***might*** increase your risk of exposure to COVID-19.
- **Are you worried about that risk?**

# Summary of unknowns regarding COVID-19 (in general)

- **COVID-19**

- *True infection rates*
- *True prevalence rates*
- *Fatality rates*
- *Long-term course of pandemic, local hospital resources*
- *Long-term effects on small businesses and the economy*

- **Unknown** risk of birth defects

- **Unknown** risk of vertical transmission

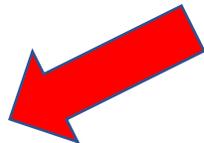
- **Unknown** impact on pregnancy

- ?preterm delivery, intrauterine growth restriction

# People at higher risk for severe COVID-19 illness

(from the CDC, updated 7/1/20)

- *Older adults (8 in 10 deaths in adults 65 years and older)*
- *People who live or work in a nursing home or long-term care facility*
- **Underlying medical conditions**
  - Chronic obstructive pulmonary disease
  - Type 2 diabetes mellitus
  - Serious heart conditions (heart failure, coronary artery disease)
  - Immunocompromise (weakened immune system) from organ transplant
  - Severe obesity (body mass index  $\geq 30$ )
  - Chronic kidney disease
  - Liver disease
  - Sickle cell disease
  - Asthma (moderate-to-severe)
  - Smoking
  - **Pregnancy**





# Take-home messages



- 1.) You are **NOT** likely to die from COVID-19.
- 2.) COVID-19 is still coming. Possible second wave this fall.
- 3.) Please **stay six feet apart** from everyone outside your family or household, whether or not you are wearing a mask.
- 4.) Donate blood.
- 5.) Keep informed. **Help us battle misinformation!**



**American  
Red Cross**

Blood  
Services

## Give Blood. Find a Drive.

ZIP or Sponsor Code

Find A Drive >

[Advanced Search](#)

### Blood drive availability during COVID-19 outbreak.

We are working to quickly identify and replace blood drives canceled due to workplace and school closures. Search above for opportunities near you and check back often as we are continuously adding new donation opportunities. If you don't see available appointments near you in the near future, please search 14 days out or beyond. The need for blood is constant - patients need your help.



- From Tue 6/2/20 BCMS webinar, “Updates and Hot Topics”

# Misinformation

- What are the issues?
  - Fear
  - Social media = rapid spread of false information
  - Politics
  - Distrust
  - Lack of reliable, data-driven information
  - Lack of understanding
  - Lack of transparency?
- “We need to build a society that is resilient to falsehoods about Covid 19, a task that will only become more vital as vaccines near.”

**nature**

NEWS FEATURE · 27 MAY 2020

## **The epic battle against coronavirus misinformation and conspiracy theories**

Analysts are tracking false rumours about COVID-19 in hopes of curbing their spread.

[Philip Ball](#) & [Amy Maxmen](#)

EDITORIAL · 27 MAY 2020

## **Coronavirus misinformation needs researchers to respond**

Researchers must be transparent and acknowledge what is known and what isn't.

- From Tue 6/2/20 BCMS webinar, “Updates and Hot Topics”

# Updates in Management

Review | [Open Access](#) | Published: 27 May 2020

## Treatments Administered to the First 9152 Reported Cases of COVID-19: A Systematic Review

[David C. Fajgenbaum](#) , [Johnson S. Khor](#), [Alexander Gorzewski](#), [Mark-Avery Tamakloe](#), [Victoria Powers](#), [Joseph J. Kakkis](#), [Mileva Repasky](#), [Anne Taylor](#), [Alexander Beschloss](#), [Laura Hernandez-Miyares](#), [Beatrice Go](#), [Vivek Nimgaonkar](#), [Madison S. McCarthy](#), [Casey J. Kim](#), [Ruth-Anne Langan Pai](#), [Sarah Frankl](#), [Philip Angelides](#), [Joanna Jiang](#), [Rozena Rasheed](#), [Erin Napier](#), [Duncan Mackay](#) & [Sheila K. Pierson](#)

*Infectious Diseases and Therapy* (2020) | [Cite this article](#)

892 Accesses | 60 Altmetric | [Metrics](#)

- Systematic review of available data re: treatment of Covid patients between 12/1/19 – 3/27/20
- 115 unique off-label and experimental therapies used
- Did not compare drugs, but have made a registry compiling a list of all attempted therapies

- From Tue 6/2/20 BCMS webinar, “Updates and Hot Topics”

# Misinformation

- Read every publication with scrutiny, typical rigorous peer review and publication standards are lower during this time of frequent research
- **Don't** believe everything you hear
- Correct misinformation when you hear it
- **Ease fears** and **give explanations**

# How to handle this world of uncertainty?

- Appreciate the nuances and gray areas in medicine
- Read a lot, absorb best practices from others
- Be flexible, be prepared to absorb new information, be ready to change directions
  
- Keep open lines of communication

→

## NEWS AND PUBLICATIONS

- [Publications Overview](#)
- [News and Research](#)
- [Ethics Documents](#)
- [Practice Committee Documents](#)
- [Patient Fact Sheets and Booklets](#)
- [Ten Things Physicians and Patients Should Question](#)
- [Choosing Wisely: When It's Hard To Get Pregnant](#)
- [COVID-19 Resources for Patients](#)

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# A Message from the MHPG and ASRM on Coping During the COVID-19 Pandemic

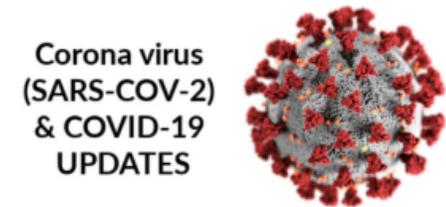
Apr 02, 2020  
Author: MHPG/ASRM  
Origin: ASRM Announcement

The MHPG joins ASRM in recognizing that the COVID-19 pandemic is a global threat that will affect all ASRM members. Indeed it will affect every single person on our planet. No one will be untouched. The threat of the virus is compounded by the additional challenges of social isolation, governmental mandates, restrictions on travel, financial collapse, and the contagious nature of anxiety, fear, and panic. In some areas, xenophobia, too, has taken a hold as people struggle to find a reason why this is happening. There are dangers of falling into despair and hopelessness. There are opportunities for the development of resilience and post traumatic growth.

**We need understanding and acceptance, we need to pull together, and we need a plan.**

ReproductiveFacts.org is a patient education website of ASRM.

Powered by [Google Translate](#)



**We need understanding and acceptance, we need to pull together, and we need a plan.**

**As human beings, we all have human flaws, we are all social, we all adapt and adjust to our circumstances, and we all create meaning about our experience.** With our personal limitations, we need to be kind to one another and to ourselves. With social distancing, we need to ensure that we stay connected. We need to learn new ways to adapt and adjust to our existence. We need to be careful that the meaning we create is not fueled by fear and prejudice, but by hope, the belief in the goodness of others, in our human capacity to change and grow, and in the profound importance of doing our best to maintain continuity for our personal futures and for our loved ones, as well for our planet.



**Hope is essential.** In times of great threat, loss, uncertainty, and discontinuity, there is the ever-present danger that we may feel hopeless. At these times, we have to depend on the hope of others. The whole is greater than the sum of the parts, and this is true of people, who need social groups with which to connect for social support. As members of our professional groups, as members of the ASRM, we can and must pull together and gain support from leaning on each other and sharing the load during this plague.



**We are not alone.** This statement, which has been profoundly helpful and life-sustaining to anyone who has, for example, experienced infertility or sustained the double blow of a cancer diagnosis and the need for immediate and truncated fertility preservation, is also profoundly important in this pandemic. We are not alone. We are social distancing, but we must remain social. We may work remotely, but we must not be remote.

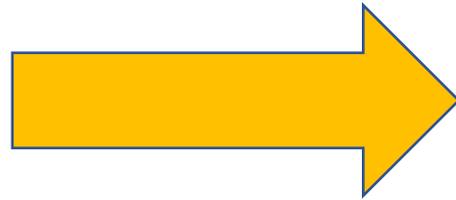


**We can survive and thrive.** We must and can do more than survive. We can learn how to thrive. We can take this time to learn how to recognize and appreciate the inter-connectedness of our lives. We can learn how to prioritize and value what really matters.

Mental Health Professionals are trained to work with all the fears and anxieties and losses—and the whole range of human experience. We will do

going through hell, keep going ; This too shall pass.

## Recommendations for Coping



- Understand that this is an unprecedented threat which may overwhelm a person's regular capacity to cope.
- Recognize that the invisibility, uncertainty and social isolation may result in normal and expected feelings of panic, fear, terror, helplessness, hopelessness, loss of control, fears for loved ones, financial concerns, and practical issues such as working from home while homeschooling without childcare.
- Validate and accept how extremely difficult this situation is. You are not alone; we are all in this together. Being proactive and having agency is healthy.
- Reach out for (virtual) social support with individuals and groups.
- Initiate regular video conferences with friends and colleagues for Trivia Night, Book or Movie Club, Quiz Night; Consultation and Check-Ins.
- Reach out to old friends and extended family.
- Limit exposure to news and social media.
- Evaluate whether contacts, such as Facebook groups, are helpful or not.
- Limit your contact with people who upset you (if possible).
- Maintain healthy habits of eating, sleeping, and exercise.
- Learn more about the importance of healthy nutrition.

## Exercise--Mental and Physical--is Important

- jigsaw puzzles, sudoku, and crossword puzzles can be calming

- Learn more about the importance of healthy nutrition.

## Exercise--Mental and Physical--is Important

- Jigsaw puzzles, sudoku, and crossword puzzles can be calming
- Add yoga and meditation--utilize apps on your mobile devices for these.



## Take Time to Do Something You Enjoy

- Develop a daily structure and routine.
- Learn something new, a language or new skill.
- Go on a virtual tour of a museum.
- Be patient and kind with yourself and others. We are all human and we will all experience being at our best and our worst.
- Practice gratitude--one day at a time, one hour at a time.
- Donate money or donate supplies. Help a neighbor.
- Reach out for professional help and utilize hotlines.
- Volunteer. Altruism and giving to others is healing.
- Affiliate with a group (such as ASRM). It is protective and promotes mental health.
- Laugh. Humor helps.
- Lower your expectations of self and others.
- Avoid unhealthy habits (smoking, alcohol, using substances), etc.
- As humans we are social; we adjust and adapt and we make meaning out of our experience. Try to avoid negative and fearful meaning-making.

*Contributed by Anne Malavé, Ph.D., Chair of the MHPG, 2019-2020*



# Helpful websites

- [CDC.gov](https://www.cdc.gov/)
- [Missouri DHSS: https://health.mo.gov/](https://health.mo.gov/)
- [City of Columbia: https://www.como.gov/coronavirus/](https://www.como.gov/coronavirus/)
- [BCMS: https://www.boonecountymedicalsociety.org/covid-19-resources.html](https://www.boonecountymedicalsociety.org/covid-19-resources.html)
- [MSMA: https://www.msma.org/cv19.html](https://www.msma.org/cv19.html)
- [AMA: https://www.ama-assn.org/delivering-care/public-health/covid-19-2019-novel-coronavirus-resource-center-physicians](https://www.ama-assn.org/delivering-care/public-health/covid-19-2019-novel-coronavirus-resource-center-physicians)





COLUMBIA, MISSOURI

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Doing Business in Columbia

City Government

Visitors

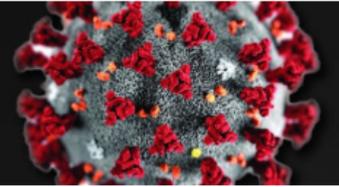
CoMobile Apps

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HOME » CORONAVIRUS

# CORONAVIRUS (COVID-19) OFFICIAL INFORMATION



## Available Resources



[Stay at Home Order 2020-03](#)



[Essential Business Determination Form](#)



[Latest Updates](#)



[Health Resources](#)



[Get Help](#)



[Give Help](#)



[Frequently Asked Questions](#)



[Changes to City Services](#)



[City-Related Cancellations and Closings](#)



Total Cases in Boone County

66

Total Cases

42

Active

23

Recovered

1

Deaths



Cases in Missouri\*

1,327

Positive

14

Deaths

\* Prior to the MSPHL's approval to test for the virus that causes COVID-19 on Feb. 27, the CDC was performing testing for Missourians. The first 9 patients were tested by the CDC.





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Help stop COVID-19 DO THE FIVE

Missouri Novel Coronavirus Information Hotline

877-435-8411



HANDS

Wash them often



ELBOW

Cough into it



FACE

Don't touch it



FEET

Stay more than 6ft apart



FEEL

Sick? Stay Home



Have questions? Chat about COVID-19



COVID-19 STATE TEAM MEMBER RESOURCES

How do I...

- learn about COVID-19
- learn about the flu
- report adult abuse and neglect?
- apply for medical marijuana identification card?
- find opioid crisis response?
- find my local health department?
- request a birth & death certificate?
- find child care provider inspections?
- apply for WIC?
- see more...

Recent News



# Helpful websites

- [CDC.gov](https://www.cdc.gov/)
- [Missouri DHSS: https://health.mo.gov/](https://health.mo.gov/)
- [City of Columbia: https://www.como.gov/coronavirus/](https://www.como.gov/coronavirus/)
- **BCMS**: <https://www.boonecountymedicalsociety.org/covid-19-resources.html>
- **MSMA**: <https://www.msma.org/coronavirus-2019-covid-19.html>
- **AMA**: <https://www.ama-assn.org/delivering-care/public-health/covid-19-2019-novel-coronavirus-resource-center-physicians>



# Local Resources

- **Every Saturday** (at 8 am): Missouri State Medical Association hosts conference calls with Dr. Randall Williams, Director of our Missouri Department of Health and Senior Services (DHSS)
- **Most Mondays** (at noon): the Missouri Telehealth Network holds a “COVID ECHO” Zoom webinar
- **Most Tuesdays** (at 7 am): the Boone County Medical Society hosts informational webinars on the state of COVID-19 in mid-Missouri, Legislative Updates, etc

# For more information

- Please e-mail me at “Albert Hsu” <[hsual@health.missouri.edu](mailto:hsual@health.missouri.edu)>



# COVID-19 Case investigation and contact tracing overview – Boone County July 2020

Lynelle Phillips RN MPH

Assistant Teaching Professor, Department of Public Health

School of Health Professions

University of Missouri

Total Number of Cases

**2,152**

in Boone Co., MO

Total Missouri

**78,062**

Cases

Cases Removed from

**1,677**

Isolation in Boone Co., MO

Active Cases in

**468**

Boone Co., MO

Total Missouri

**▲ 1,449**

Deaths

Total Boone Co. Citizens

**55**

Who Have Been Hospitalized

Boone Co. Citizens

**10**

Currently Hospitalized

Death Rate (Per 100,000)

**3.889**

in Boone Co., MO

Boone County Cases in Age Group 18-22 Years Old

**742**

64 New Cases Since Yesterday

Contacts Currently in

**913**

Quarantine in Boone Co., MO

14 Day New Case Rate per 10,000

**37.35**

Boone Co., MO

Total Contacts Identified to Date

**4,682**

in Boone Co., MO

Total COVID-19 Deaths

**▲ 7**

in Boone Co., MO

## Methods of Reporting Laboratory COVID-19 Test Results

---

Laboratories are encouraged to report via electronic means.

- Submitting spreadsheets to BRDI by secure file transfer protocol (sFTP)
  - Please call [573-526-5271](tel:573-526-5271). The sFTP option functions as a secure online folder where files may be submitted with no wait. In order to use this option, at least one contact e-mail address for the submitting organization must be provided. Further instructions will be sent to the indicated e-mail address(es) once an account is set up for the organization.
  - Format:
    - Laboratories may use their own format OR
    - Laboratories may use our **template** .
    - Submit individual laboratory reports in portable document format (PDF) files sent to BRDI by secure file transfer protocol (sFTP)
- Alternatively, laboratories may submit via fax to BRDI at [573-751-6417](tel:573-751-6417). Please note that this fax line experiences high volume during normal business hours.

In the future, BRDI will work to onboard laboratories who wish to submit electronic laboratory reports (ELR) via Health Level Seven (HL7) messages. ELR HL7 onboarding is currently suspended due to COVID-19.

## Required Data Elements

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Per state regulation, **19 CSR 20-20.80**, laboratories shall report “[...] the test performed, all results of the test, including numeric results, if applicable, units of measure of the results, and reference ranges for normal and abnormal results, the name and address of the attending physician, the name of the disease or condition diagnosed or suspected, the date the test results were obtained, the name and home address (with zip code) of the patient and the patient’s age, date of birth, sex, race, and ethnicity.”

Laboratories should note their obligation to report:

- home address (with zip code)
- date of birth
- sex
- race
- ethnicity

It is the responsibility of the laboratory to assure this information is provided. This may require laboratories to work with a patient’s physician (or other health care provider) ordering the laboratory test to be performed.

<https://health.mo.gov/living/healthcondiseases/communicable/novel-coronavirus/how-to-report-lab-results.php>

# CONTACT TRACING FINDS CASES QUICKLY SO THEY CAN BE ISOLATED TO REDUCE SPREAD

Confirmed case



Ask about contacts

Isolate contact & provide care



Contact shows symptoms or tests positive

Confirmed case  
Isolate contact & provide care



Ask about contacts



Test and watch for symptom during incubation

14 days



Contact shows no symptoms after incubation period

14 days

Contact not at risk for developing disease

# Case investigations and contact tracing

- Case investigation
  - Surveillance data
  - Initiate contact investigation
  - Isolation precautions
- Contact tracing
  - Monitoring
  - Quarantine instructions
  - Follow-up testing plan



**Contact Tracing:** The process of identifying people who may have been exposed to a contagious disease and monitoring and treating those people to control the spread of the disease.

# Case investigation - PUI form



## Human Infection with 2019 Novel Coronavirus Case Report Form

Reporting Jurisdiction		Case state/local ID	
Reporting Health Department		CDC 2019-nCoV ID	
Contact ID <sup>a</sup>		NNDSS loc. rec. ID/Case ID <sup>b</sup>	

<sup>a</sup>Only complete if case-patient is a known contact of prior source case-patient. Assign Contact ID using CDC 2019-nCoV ID and sequential contact ID, e.g., Confirmed case CA102034567 has contacts CA102034567 -01 and CA102034567 -02. <sup>b</sup>For NNDSS reporters, use GenV2 or NETSS patient identifier.

### Interviewer Information

Name of Interviewer: Last:	First:	Telephone:	Email:
Affiliation/Organization:			

### Case Classification and Identification

<p>What is the current status of this person?</p> <input type="checkbox"/> Lab-confirmed case* <input type="checkbox"/> Probable case <p>If probable, select reason for case classification:</p> <input type="checkbox"/> Meets clinical criteria AND epidemiologic evidence with no confirmatory lab testing* <input type="checkbox"/> Meets presumptive lab evidence <sup>‡</sup> AND either clinical criteria OR epidemiologic evidence <input type="checkbox"/> Meets vital records criteria with no confirmatory lab testing <p>*Detection of SARS-CoV-2 RNA in a clinical specimen using a molecular amplification detection test  <sup>‡</sup> Detection of specific antigen in a clinical specimen, OR detection of specific antibody in serum, plasma, or whole blood indicative of a new or recent infection</p>	<p>Under what process was the case first identified? (check all that apply)</p> <input type="checkbox"/> Clinical evaluation <input type="checkbox"/> Routine surveillance <input type="checkbox"/> Contact tracing of case patient <input type="checkbox"/> Other, specify: _____ <input type="checkbox"/> EpiX notification of travelers. If yes, DGMQID: _____ <input type="checkbox"/> Unknown <p>Report date of case to CDC (MM/DD/YYYY):      ___/___/___</p> <p>Date of first positive specimen collection (MM/DD/YYYY):      ___/___/___    <input type="checkbox"/> Unknown    <input type="checkbox"/> N/A</p>
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### Hospitalization, ICU, and Death Information

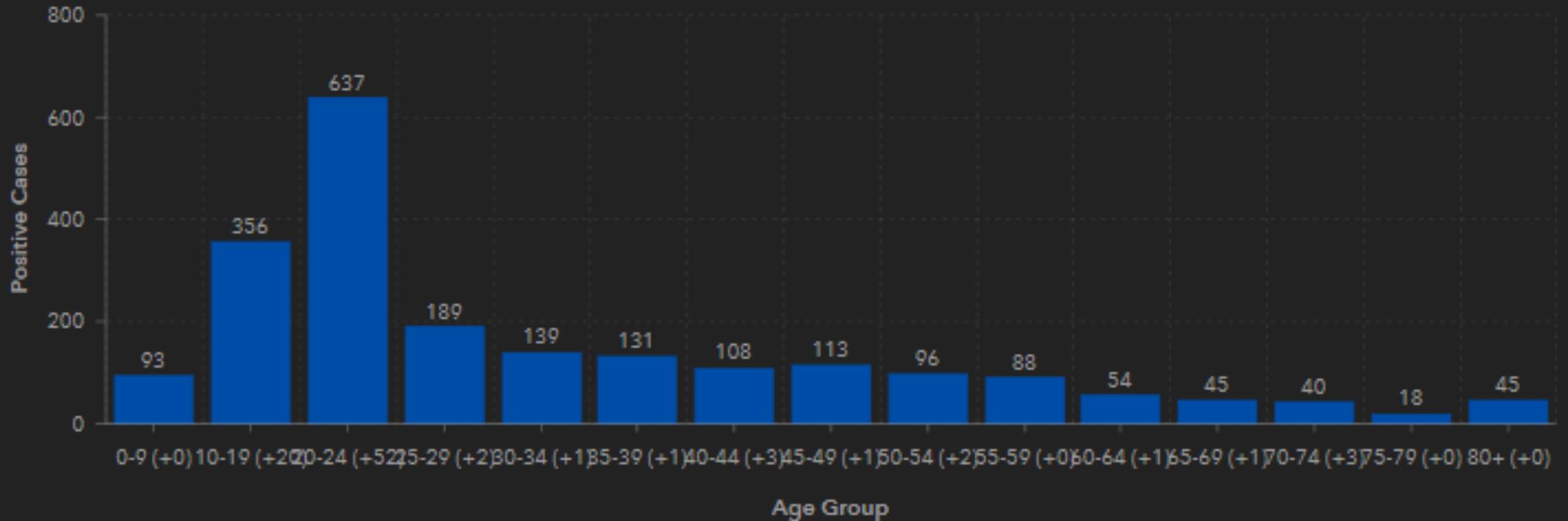
<p>Was the patient hospitalized?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <p>If yes, admission date 1 _____ discharge date 1 _____      ___/___/___ (MM/DD/YYYY)    ___/___/___</p>	<p>If hospitalized, was a translator required?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <p>If yes, specify which language: _____</p>	<p>Was the patient admitted to an intensive care unit (ICU)?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <p>If yes, admission date 1 _____ discharge date 1 _____      ___/___/___ (MM/DD/YYYY)    ___/___/___</p>
<p>Did the patient die as a result of this illness?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown    If yes, date of death (MM/DD/YYYY): ___/___/___ <input type="checkbox"/> Unknown date		

### Case Demographics

<p>Date of birth (MM/DD/YYYY): ___/___/___</p> <p>Age: _____ Age units (yr/mo/day): _____</p> <p>State of residence: _____ County of residence: _____</p> <p>Does this case have any tribal affiliation? <input type="checkbox"/> yes</p> <p>Tribe name(s): _____ Enrolled member? <input type="checkbox"/> yes</p>	<p>Sex:</p> <input type="checkbox"/> Male <input type="checkbox"/> Other <input type="checkbox"/> Female <input type="checkbox"/> Unknown <p>If female, currently pregnant?</p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<p>Ethnicity:</p> <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> Non-Hispanic/Latino <input type="checkbox"/> Unknown	<p>Race (check all that apply):</p> <input type="checkbox"/> Black <input type="checkbox"/> White <input type="checkbox"/> Asian <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Native Hawaiian/Other Pacific Islander <input type="checkbox"/> Unknown <input type="checkbox"/> Other, specify: _____
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# Age distribution – August 26, 2020

Boone County Positive Cases by Age Group



# PUI form (continued)

## Exposure Information

In the 14 days prior to illness onset, did the patient have any of the following exposures (check all that apply):

- Domestic travel (outside state of normal residence). Specify state(s): \_\_\_\_\_
- International travel. Specify country(s): \_\_\_\_\_
- Cruise ship or vessel travel as passenger or crew member. Specify name of ship: \_\_\_\_\_
- Workplace  
If yes, is the workplace critical infrastructure (e.g., healthcare setting, grocery store)?  
 Yes, specify workplace setting: \_\_\_\_\_  No  Unknown
- Airport/airplane
- Adult congregate living facility (nursing, assisted living, or long-term care facility)
- School/university/childcare center
- Correctional facility
- Community event/mass gathering
- Animal with confirmed or suspected COVID-19. Specify animal: \_\_\_\_\_
- Other exposures, specify: \_\_\_\_\_
- Unknown exposures in the 14 days prior to illness onset

- Contact with a known COVID-19 case (probable or confirmed)

If the patient had contact with a known COVID-19 case:

What type of contact?

- Household contact
- Community-associated contact
- Healthcare-associated contact (patient, visitor, or healthcare worker)

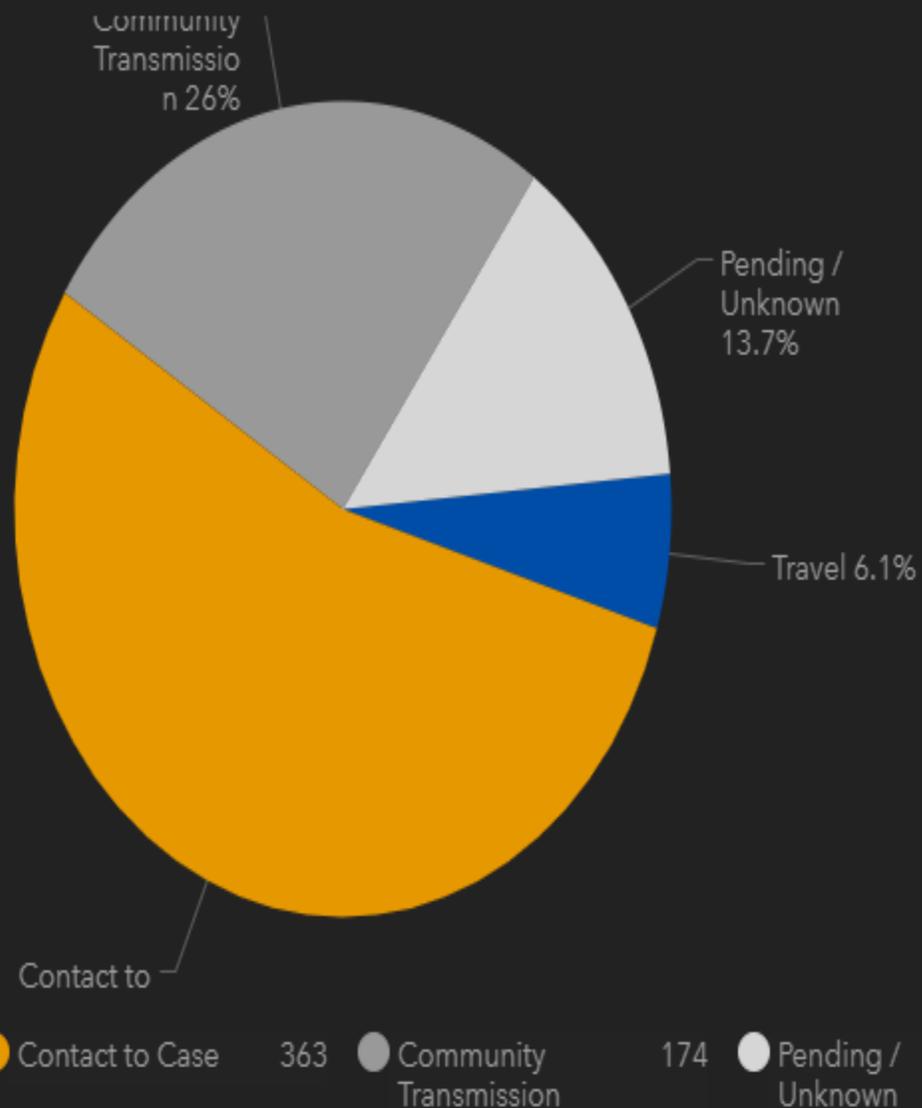
Was this person a U.S. case?

- Yes, nCoV ID(s) \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- No, this person was an international case and contact occurred abroad
- Unknown if U.S. or international case

Is this case part of an outbreak?

- Yes, specify outbreak name: \_\_\_\_\_  No  Unknown

## Boone County Positive Cases by Source of Exposure



**Community Spread:** The spread of a disease in an area without a clear chain of events or connection to a person who is known to be infected.

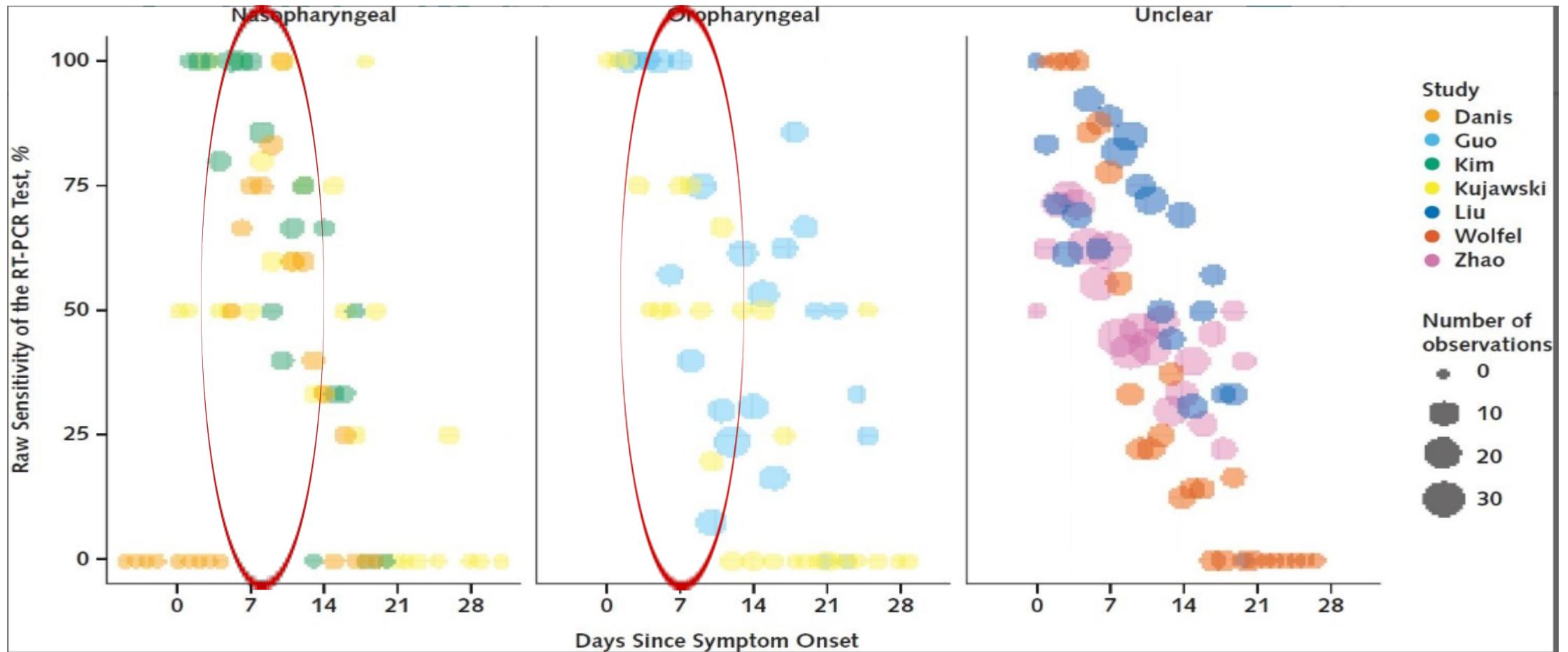
# Contact tracing

Contact ID	Date of Last Exposure	Ongoing Exposure? (Y/N)	Address as the Case? (Y/N)	Contact's First Name	Contact's Last Name	Contact's Phone Number	Monitor	Exposure Notes -- Anything the Contact Tracer Needs to Know

**Self-quarantine:** Choosing or volunteering to be quarantined after being exposed to a contagious disease. Self-quarantine usually happens at home to avoid spreading a disease to other people. Health experts recommend that individuals who may have been exposed to COVID-19 self-quarantine for 14 days after exposure, take their temperature daily and avoid interacting with people who are at high risk of complications from COVID-19.

PCR test 7  
– 9 days  
post  
exposure

Why do I have to wait so long for a test?



<https://www.acpjournals.org/doi/10.7326/M20-1495>

# (19)20-24 year-olds - thoughts

- Good communicators
- Amateur contact tracing
  - Over informing (> 48 hours)
  - Misinforming
- Spill over to other demographics
- Politicizing of COVID19
- Bars and parties

Willies/Field House – June 26, 2020



# Planning ahead

- Coordinate with the health department
- Hire case investigators and contact tracers – MU SHC
  - “leave it to the professionals”
- Enforcement
  - Masks
  - Social distancing
  - Small groups
- Symptom monitoring and testing
- Quarantine and isolation provisions
- Social marketing campaign



# Contact tracing – jobs!

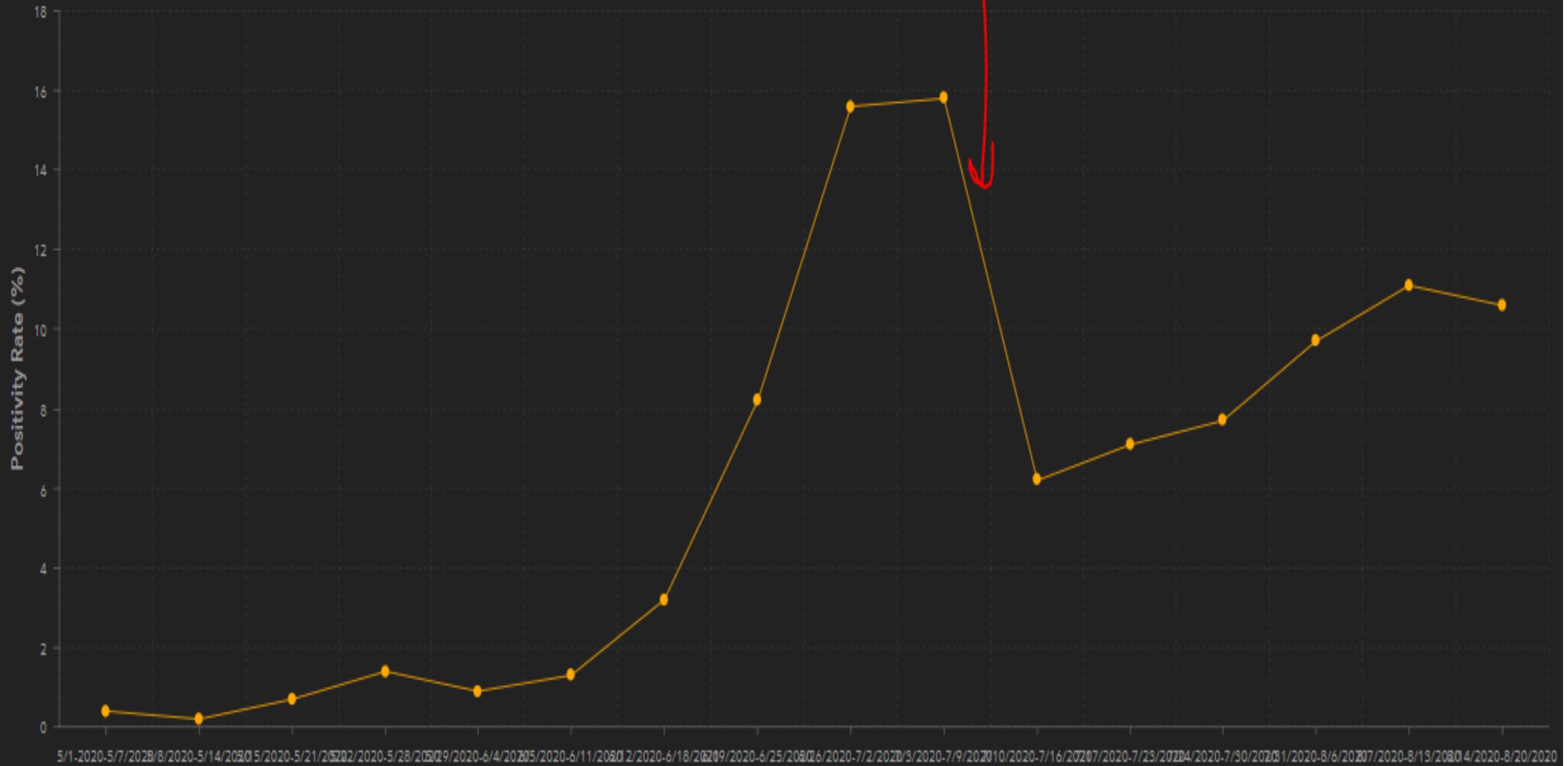
- 20-30 jobs – MU Campus – Student health center
- 31 contact tracers – Boone County Health Department

**PHOTOS: Missouri governor criticized for not wearing face mask at event**

📍 Missouri | radio.com | 21h



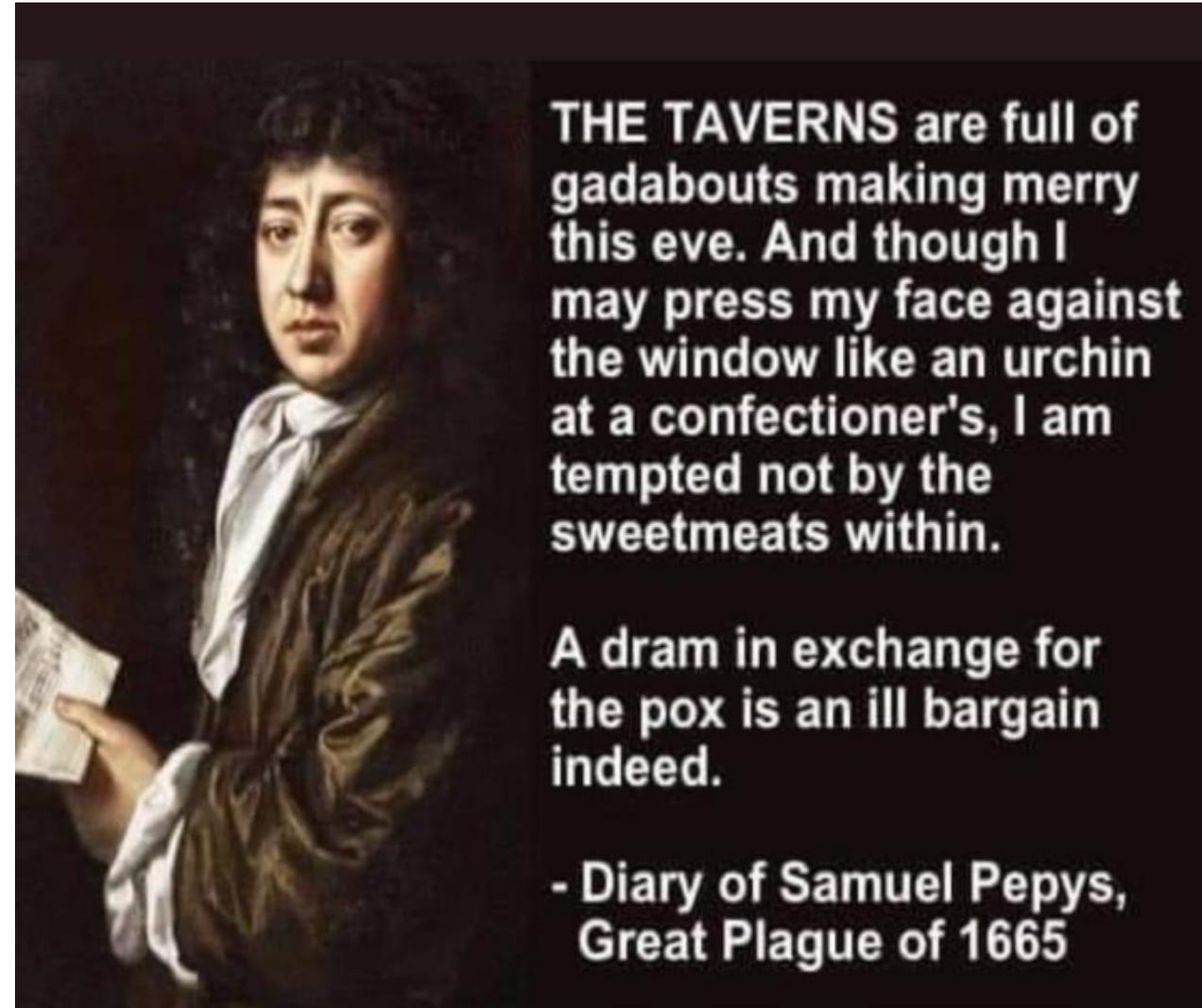
COVID 19 Positivity Rate for Boone County Citizens



5/1/2020 5/7/2020 5/14/2020 5/21/2020 5/28/2020 6/4/2020 6/11/2020 6/18/2020 6/25/2020 7/2/2020 7/9/2020 7/16/2020 7/23/2020 7/30/2020 8/6/2020 8/13/2020 8/20/2020

# Helpful websites

- <http://gocolumbiamo.maps.arcgis.com/apps/MapSeries/index.html?appid=478880b83d5e4d35b646d80fe6f2c2f6>
- <https://www.cdc.gov/coronaviruses/2019-ncov/downloads/case-investigation-contact-tracing.pdf>
- <https://renewal.missouri.edu/>



**THE TAVERNS** are full of gadabouts making merry this eve. And though I may press my face against the window like an urchin at a confectioner's, I am tempted not by the sweetmeats within.

A dram in exchange for the pox is an ill bargain indeed.

- Diary of Samuel Pepys,  
Great Plague of 1665