Epidemiology of COVID-19 in Missouri

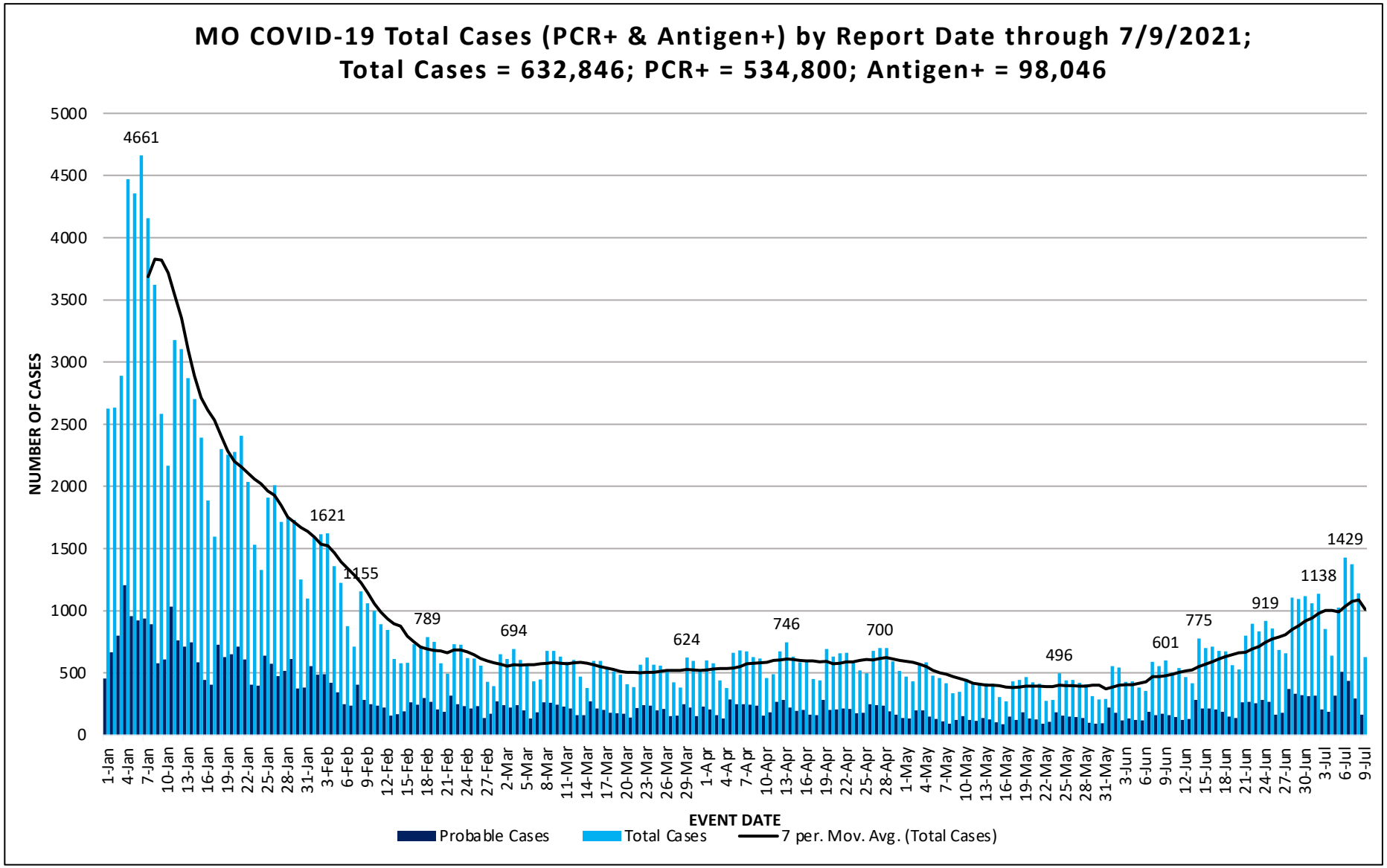
GEORGE TURABELIDZE, MD, PHD

MISSOURI STATE EPIDEMIOLOGIST

7.13.2021

COVID-19
Daily Situation Report
July 12, 2021

Avg. Total Daily Cases	Avg. PCR+ Cases	New Cases Added	Avg. Antigen+ Cases
19.6	833	154	362
Rolling 7 Day Average Per 100,000	Rolling 7 Day Average	PCR & Ant.+ Since Last Report	Rolling 7 Day Average



Deaths (9,388)

79
Median Age

1
Newly Added

Testing (7/6)

9,550
Total Tests

11.8%
Percent Positive

Ant. – 7 Days

34,658
Total Tests
6/30 – 7/6
8.0%
Percent Positive

PCR – 7 Days

52,487
Total Tests
6/30– 7/6
12%
Percent Positive

Ant. – 30 Days

150,309
Total Tests

5.8%
Percent Positive

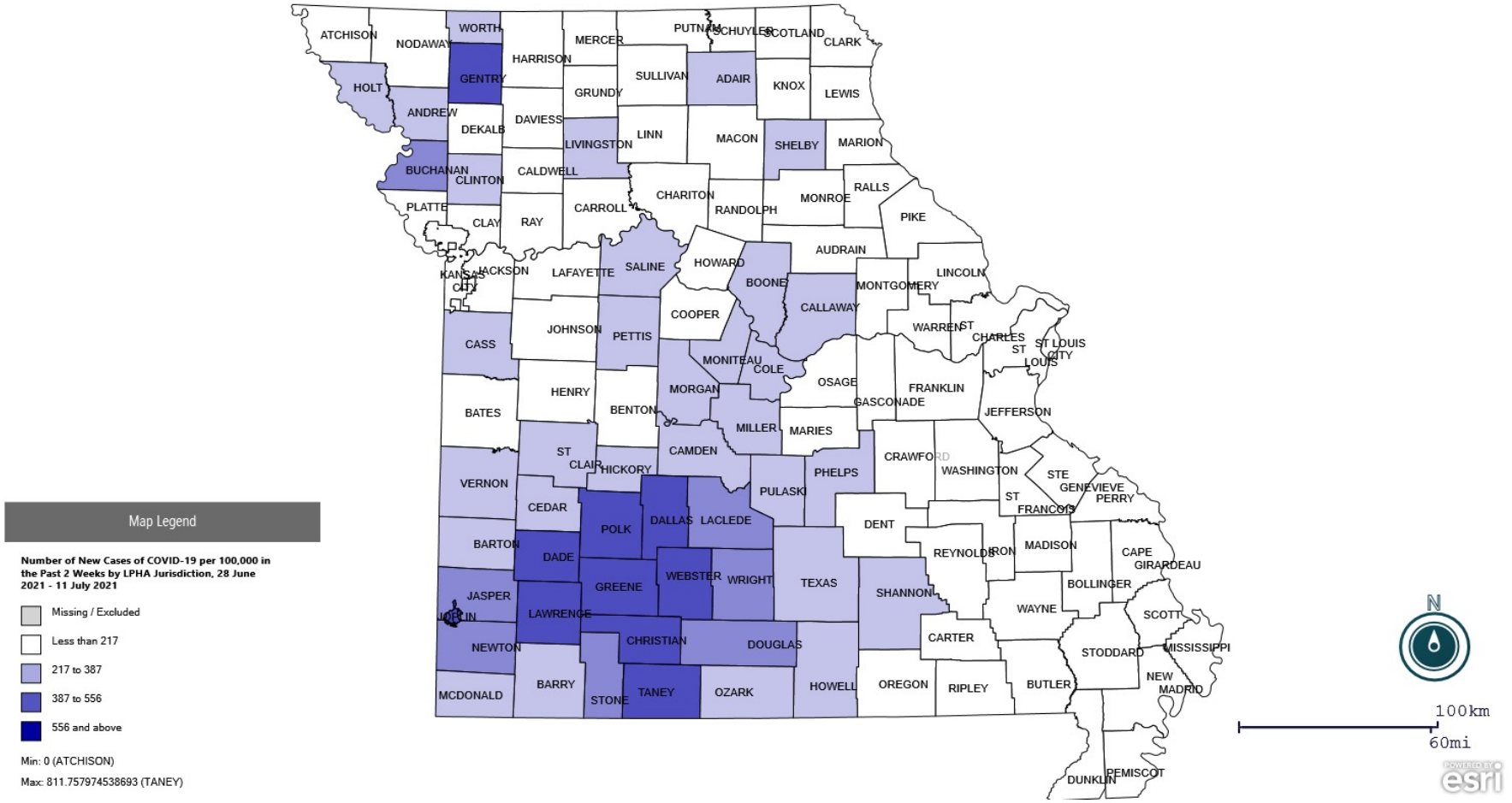
PCR – 30 Days

220,258
Total Tests

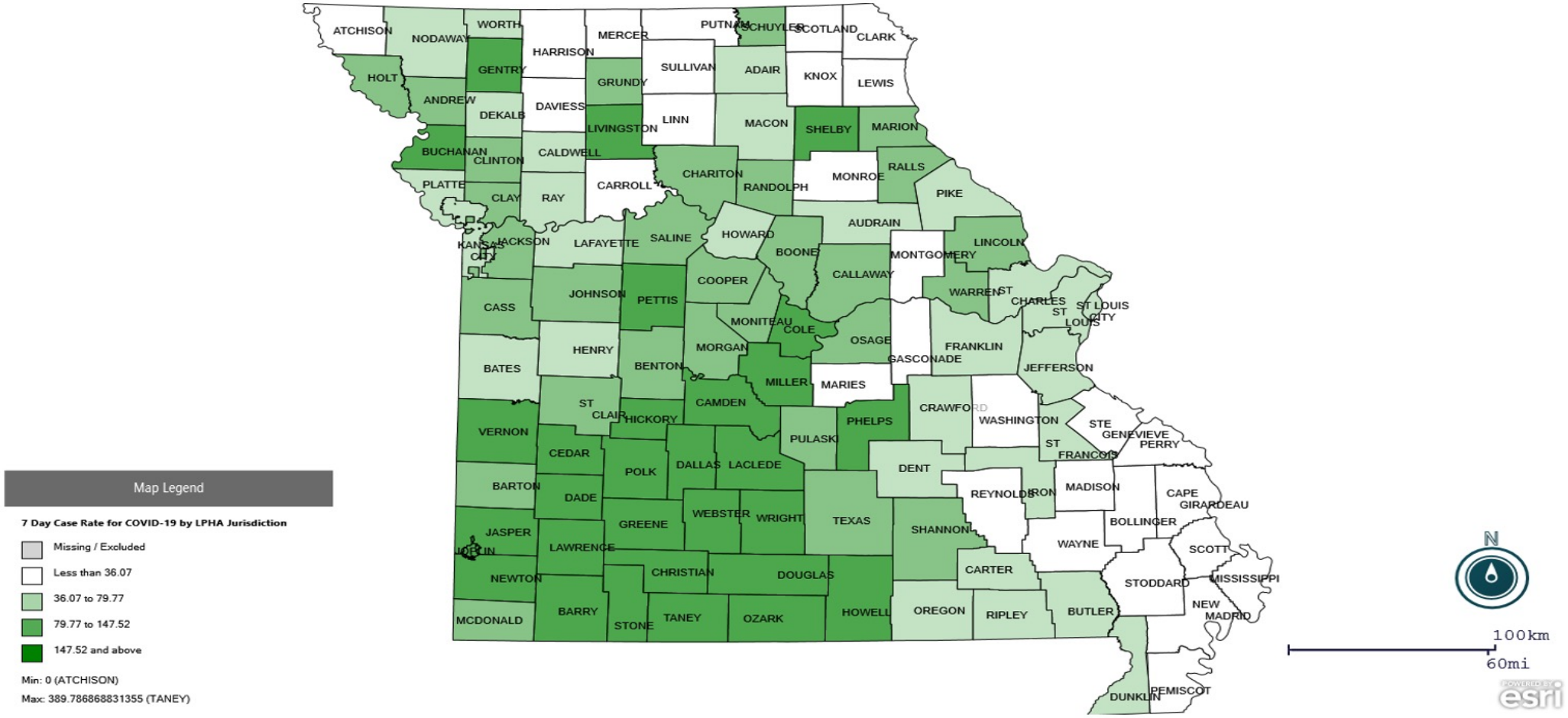
8.7%
Percent Positive

Missouri Department of Health and Senior Services
GOVERNMENT USE ONLY-NOT FOR PUBLIC DISTRIBUTION

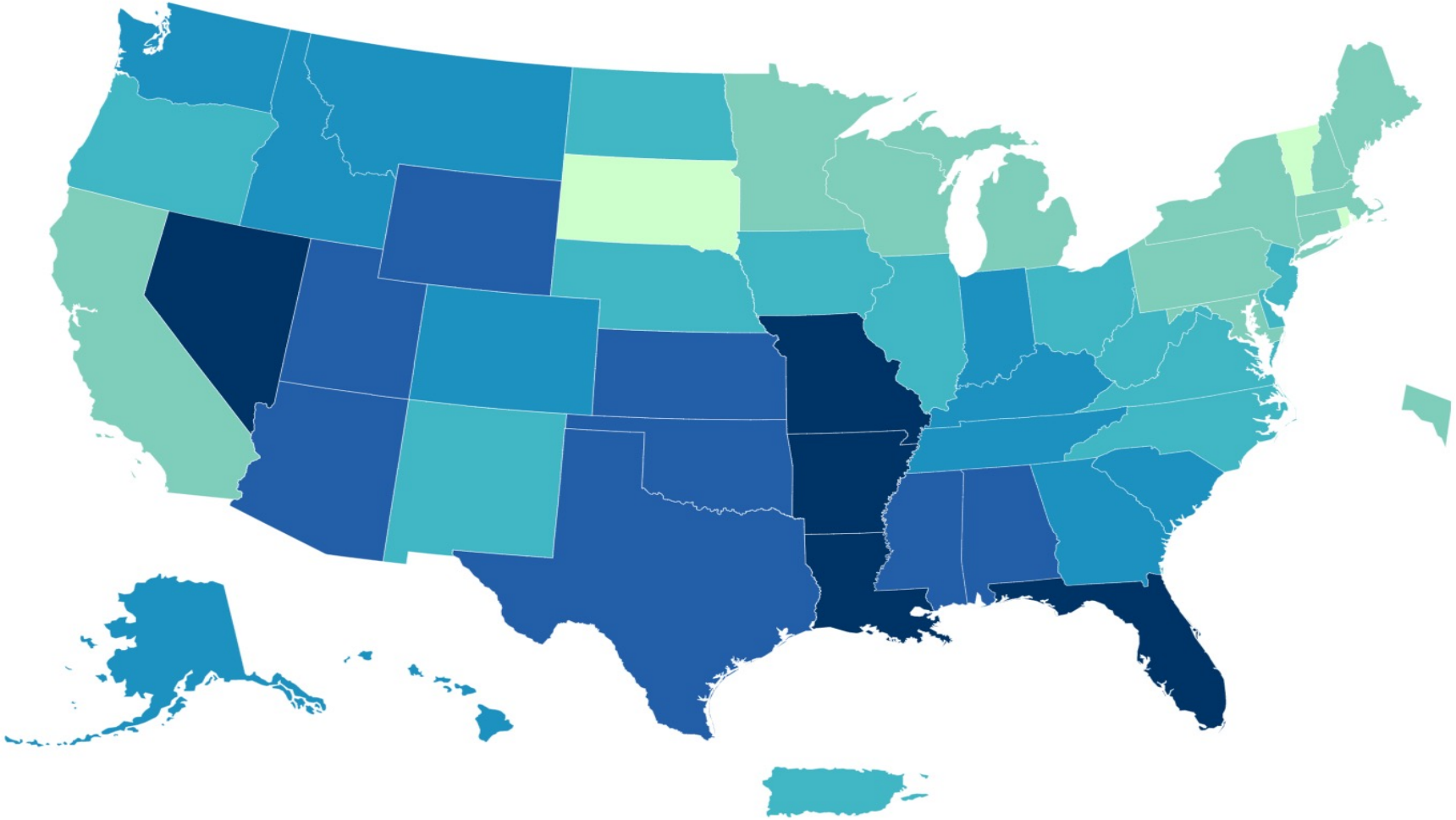
Total New Case Rate per 100,000 Past 14 Days



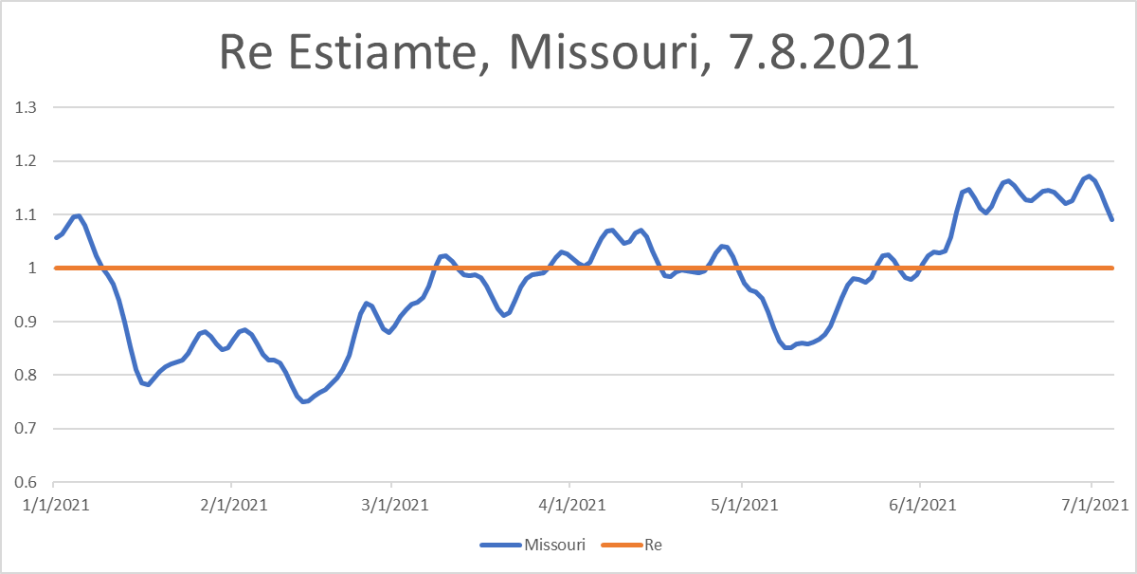
Total New Case Rate per 100,000 Past 7 Days

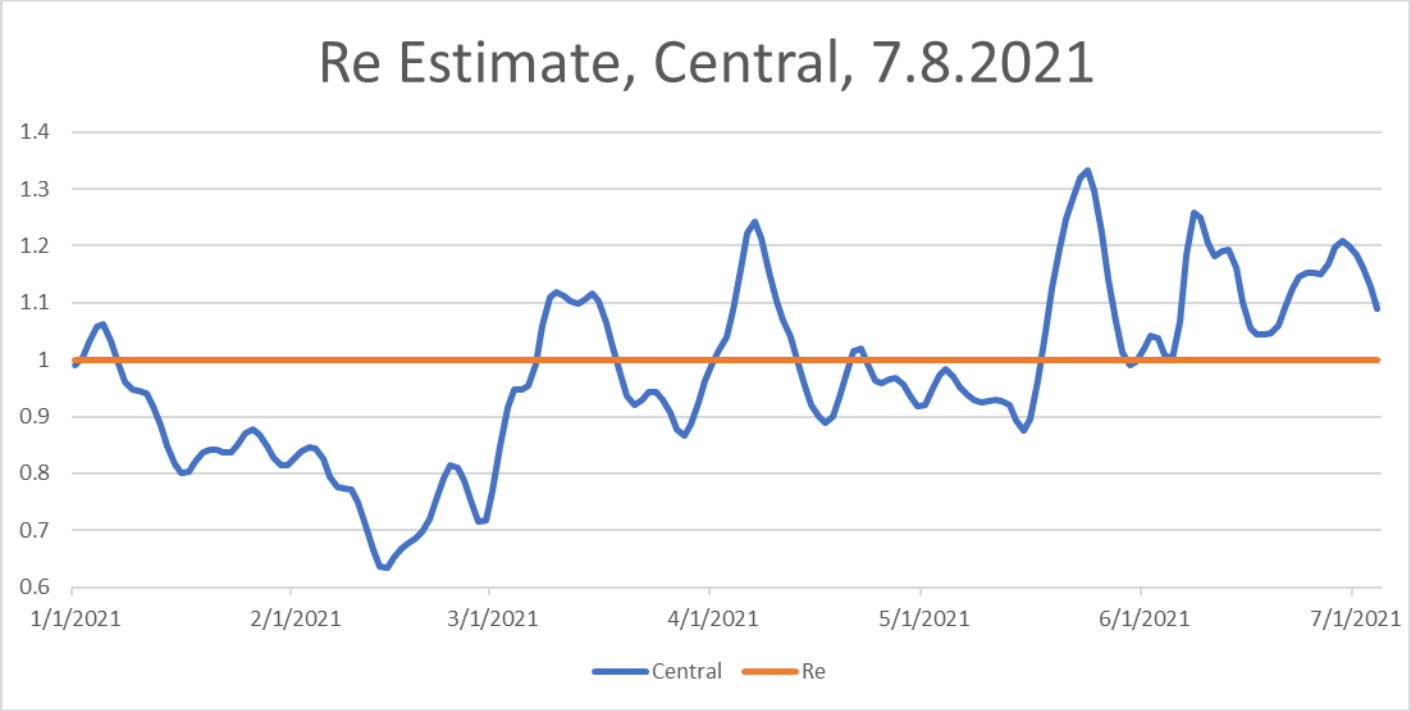


COVID-19 7-Day Case Rate per 100,000, by State, CDC (7.12.2021)



COVID-19 Reproductive Number (***Re***) Estimates, Missouri (7.8.2021)



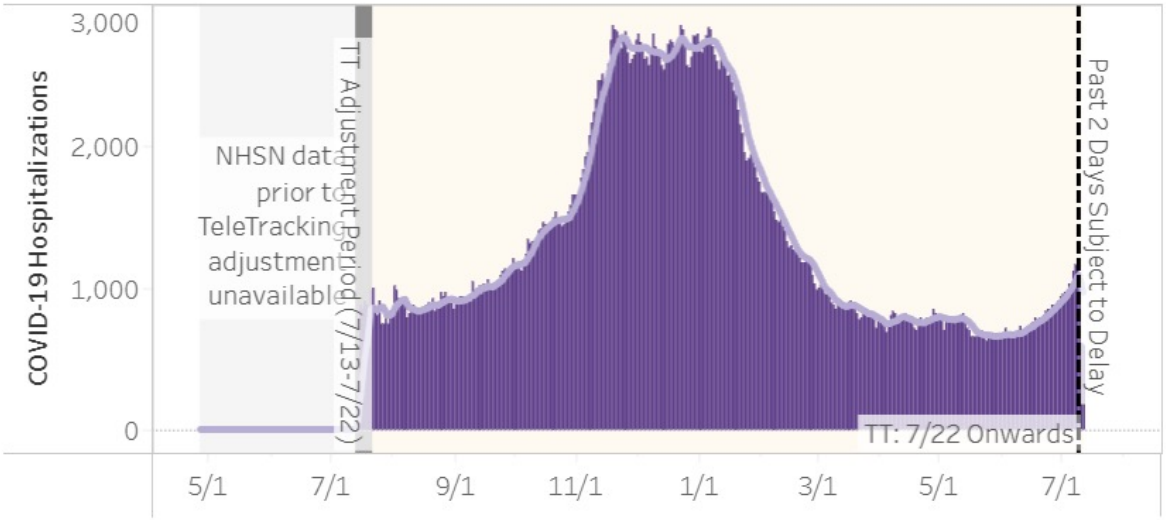


Missouri COVID-19 Hospitalizations
(7.12.2021)

COVID-19 Hospitalizations

COVID-19 Total Patients in the Hospital by Day

All Region(s) Selected

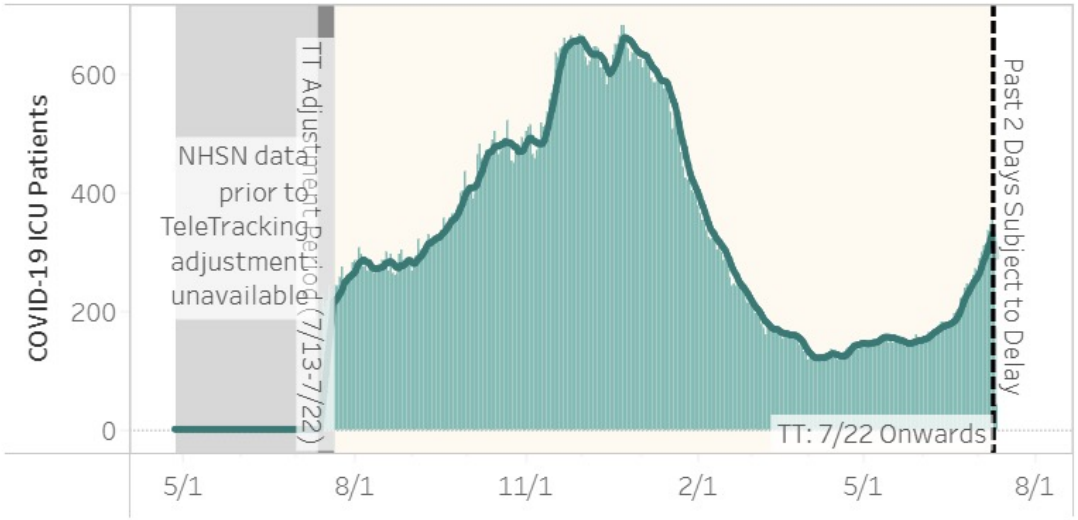


Legend: COVID-19 Hospitalizations by Day

- Total COVID-19 Hospitalizations
- 7-Day Average

COVID-19 Patients in ICU by Day

All Region(s) Selected



Legend: COVID-19 ICU Hospitlizations by Day

- COVID-19 Patients in ICU
- 7-Day Average

Missouri Wastewater Surveillance

Sampling sites (so far)

-81 wastewater treatment facilities (WWTF) in Missouri

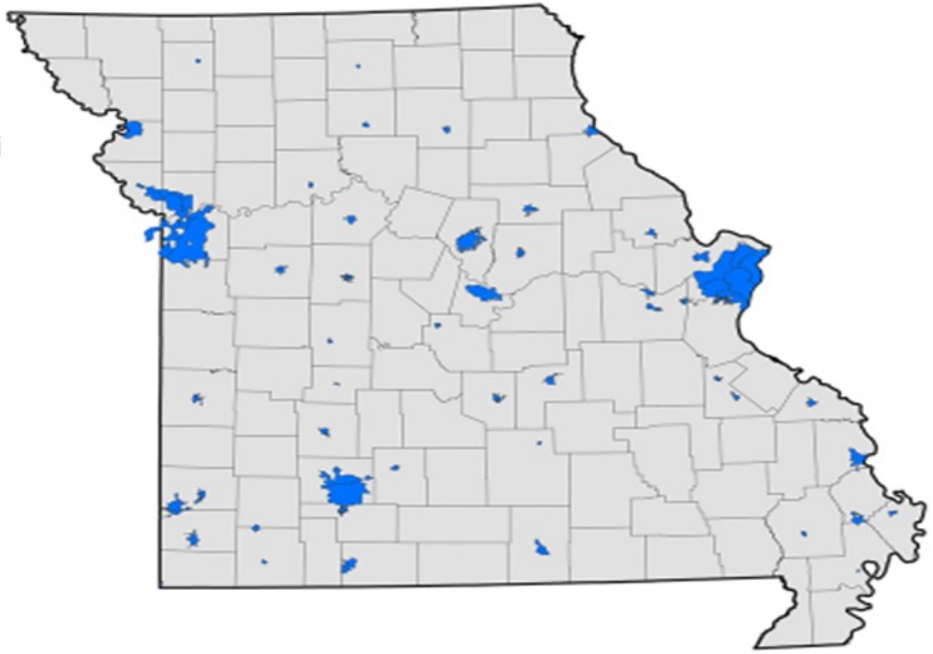
-8 state mental hospitals

-21 state prisons

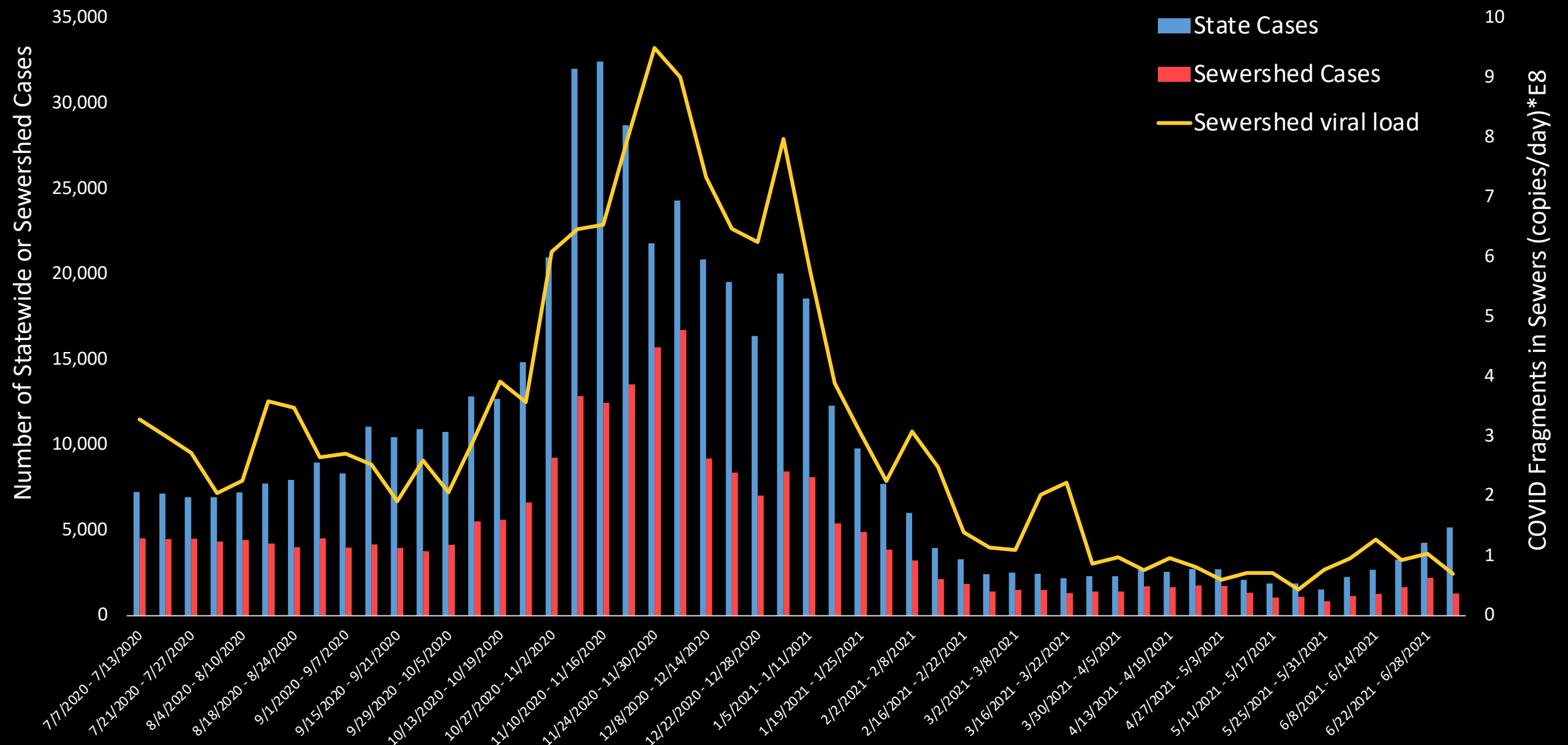
-7 veterans homes

-6 universities

Over 4,500 samples to date



MO State vs Sewershed COVID Cases and Fragments in Sewers Through July 5, 2021

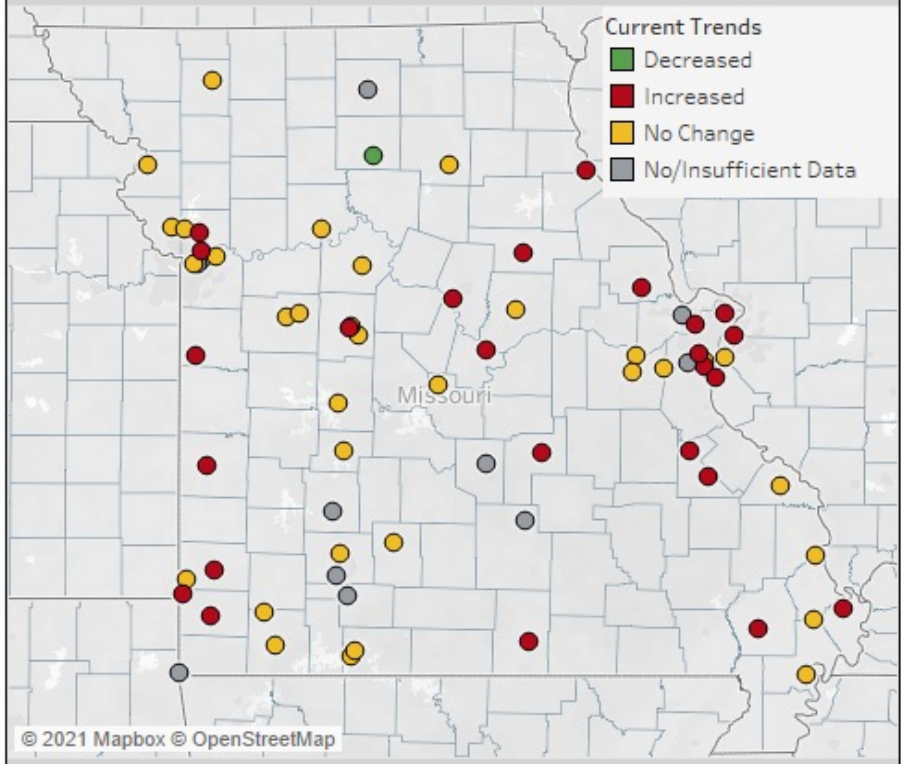


COVID-19 Wastewater Trends

State of Missouri

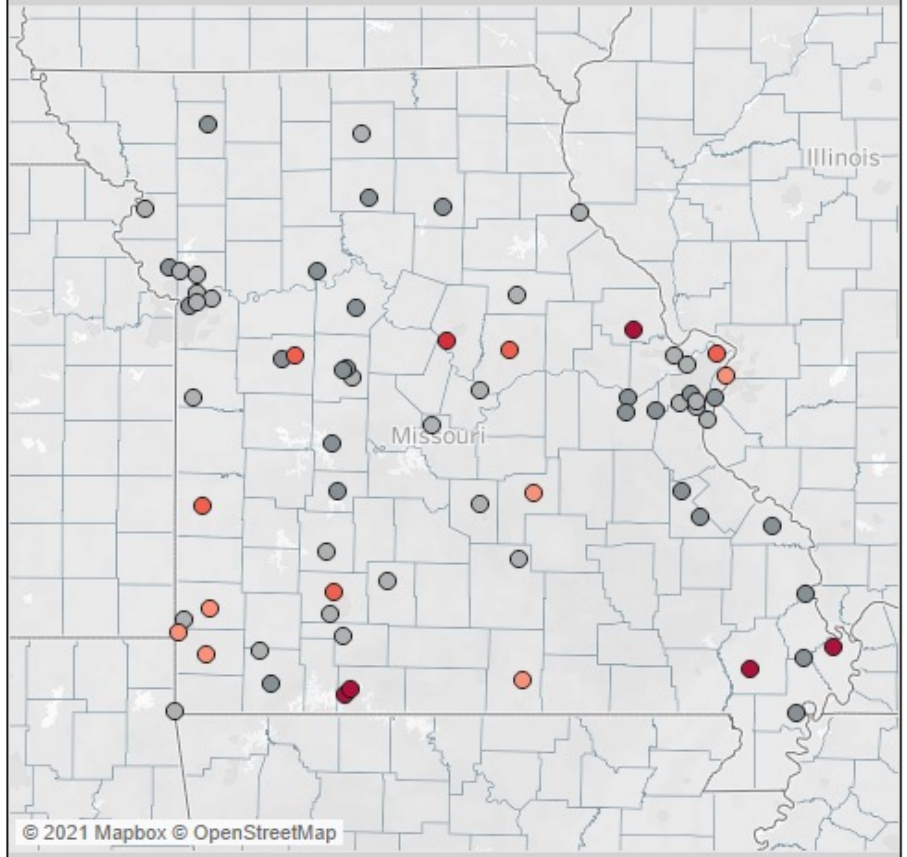
NOTE on dates: This dashboard was last updated on 7/9/2021 and includes data through 7/5/2021.

Current COVID-19 Wasterwater Trends



Data represents the change in viral gene copies per day in samples collected on 7/5/2021 from the previous week. "Increased" indicates that viral gene copies either increased by >40% from last week or by >25% over each of the previous two weeks. "Decreased" indicates that viral gene copies have decreased by >25% over each of the previous three weeks or >30% in 2 of the previous 3 weeks. "No Change" indicates that viral gene copies did not meet the criteria for the "Increased" or "Decreased" designations. "No/Insufficient Data" indicates that either no sample was collected or the measured value fell below accurate reporting limits.

Elevated COVID-19 Viral Load in Wastewater



Red circles indicate sewersheds where viral load is significantly higher than previous measures at that location, with darker reds indicating the highest viral load per person. Gray circles indicate sewershed areas where viral load is not significantly higher than previous measures at that location. The data is based on samples collected on 7/5/2021.

Facilities with increased viral load in wastewater (6/28-7/5):

Bonne Terre Northwest WWTP
Carthage WWTP
Charleston WWTP
Columbia WWTP
Dexter West WWTP
Farmington East WWTP
Hannibal WWTP
Jefferson City RWRF
Joplin Shoal Creek WWTP
KC, Fishing River WWTF
Liberty WWTP
Mexico WWTP
MSD Bissell Point WWTP
MSD Coldwater Creek WWTP
MSD Grand Glaize WWTP
MSD Lower Meramec WWTP
MSD Missouri River WWTP
Neosho WWTP
Nevada WWTF
NPSD Interim Saline Creek WWTP
Platte City WWTP
Rolla SE WWTP
Sedalia Central WWTP
Troy SE WWTP
West Plains WWTP

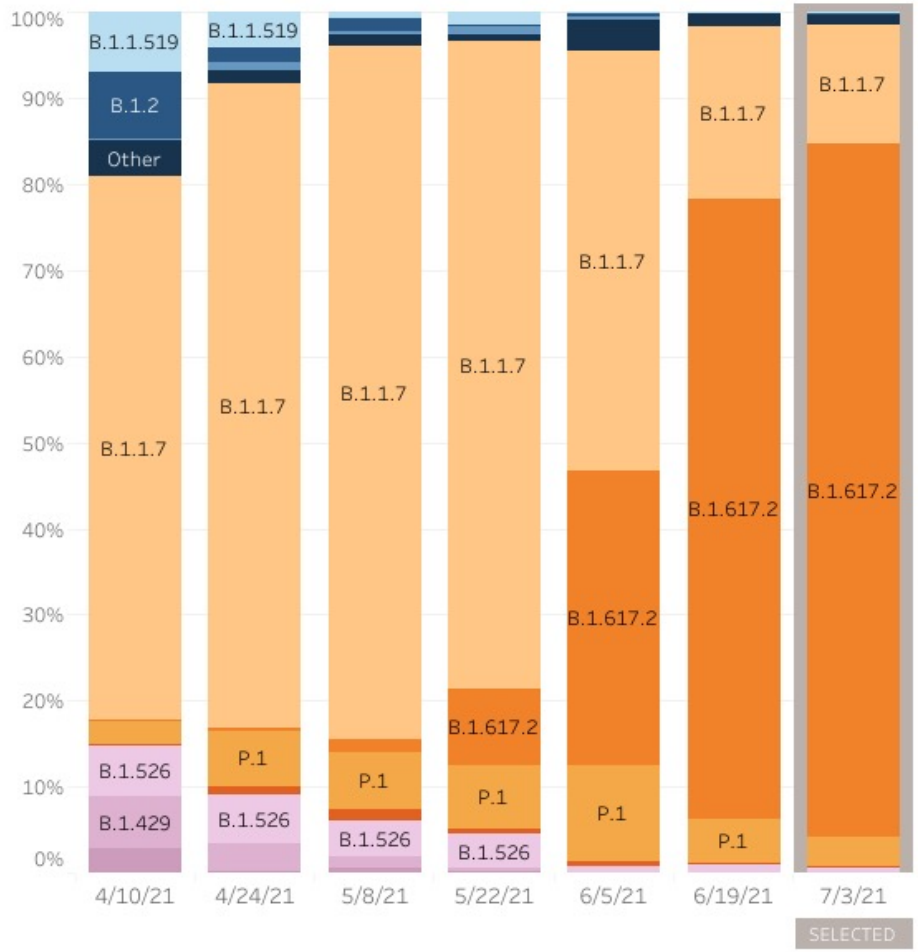
Facilities with elevated viral load in wastewater (7/5/21):

Branson Compton Drive WWTP
Branson Cooper Creek WWTP
Carthage WWTP
Charleston WWTP
Columbia WWTP
Dexter West WWTP
Fulton WWTP
Joplin Shoal Creek WWTP
MSD Bissell Point WWTP
MSD Coldwater Creek WWTP
Neosho WWTP
Nevada WWTF
Rolla SE WWTP
Springfield NW WWTP
Troy SE WWTP
Warrensburg East WWTP
West Plains WWTP

COVID-19 Seroprevalence Study

- Samples collected between April 26- May16, 2021
- National seroprevalence estimate (from infection only) was **22.1%**
- Jurisdiction-level ranging from 2.7% in Hawaii to 36.7% in Ohio
- As of mid-May 2021, most persons in the U.S. do not have evidence of a serologic response to SARS-CoV-2 from infection
- **26.1%** seroprevalence in Missouri (male 25.9%, female 26,2%)
- By age, in Missouri : 0-17 years = 25.5%, **18-49 years = 32.3%,** 50-64 years = 20.2%, over 65 years=18.5%

Weighted Estimates of Proportions of SARS-CoV-2 Lineages



Region 7 - Iowa, Kansas, Missouri, and Nebraska

	Lineage		Type	%Total	95%PI
Most common lineages #	B.1.617.2	Delta	VOC	80.7%	65.5-93.1%
	B.1.1.7	Alpha	VOC	13.8%	3.4-27.6%
	P.1	Gamma	VOC	3.4%	0.0-10.3%
	B.1			0.2%	0.0-3.4%
	B.1.1.519			0.0%	0.0-3.4%
	B.1.2			0.0%	0.0-3.4%
Additional VOI/VOC lineages #	B.1.526	Iota	VOI	0.6%	0.0-3.4%
	B.1.351	Beta	VOC	0.1%	0.0-3.4%
	B.1.429	Epsilon	VOI	0.0%	0.0-3.4%
	B.1.427	Epsilon	VOI	0.0%	0.0-3.4%
	B.1.617.1	Kappa	VOI	0.0%	0.0-3.4%
	B.1.525	Eta	VOI	0.0%	0.0-3.4%
	P.2	Zeta	VOI	0.0%	0.0-3.4%
Other*	Other			1.2%	0.0-6.9%

* Other represents >200 additional lineages, which are each circulating at <1% of viruses

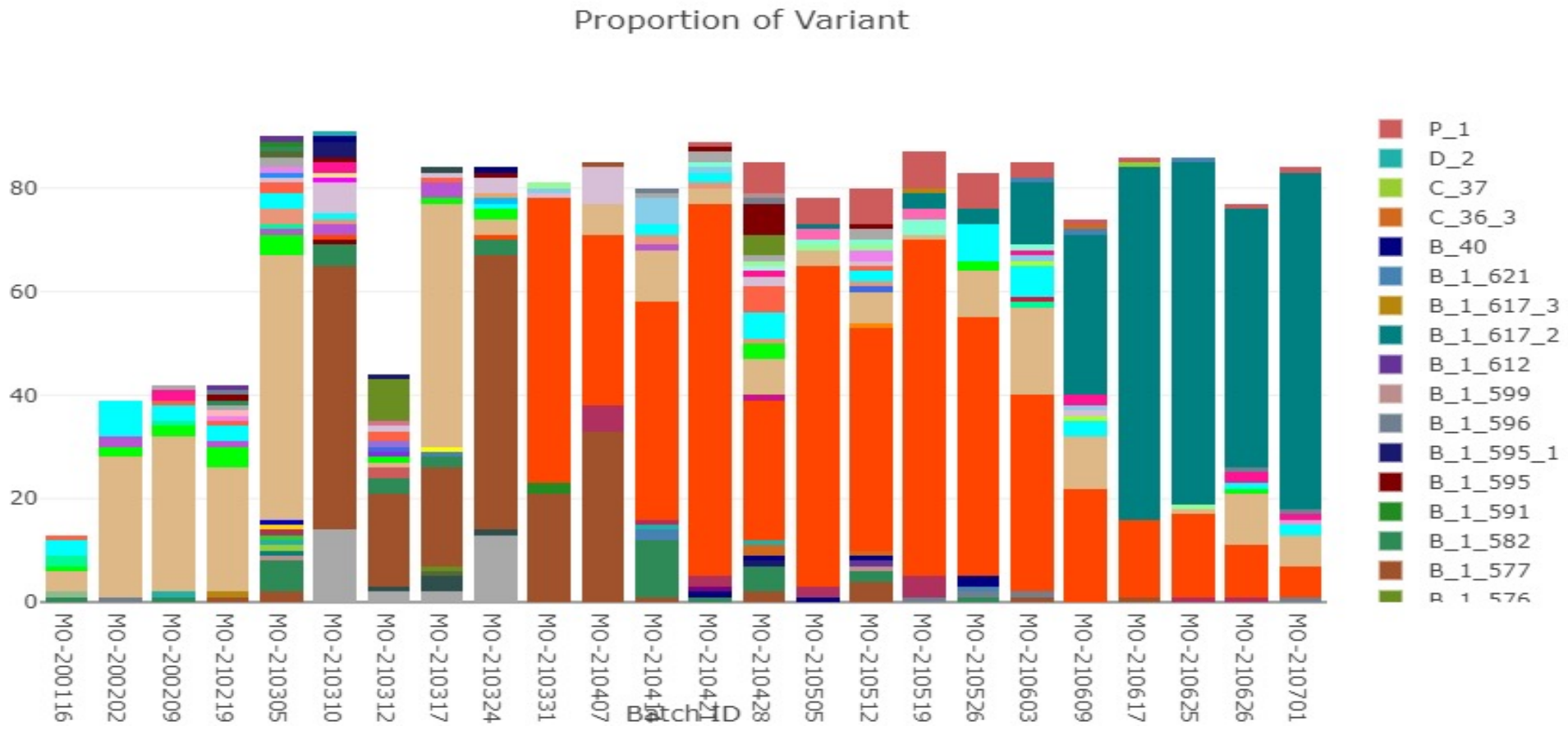
** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

\# Sublineages of P.1 and B.1.351 (P.1.1, P.1.2, B.1.351.2, B.1.351.3) are aggregated with the parent linteage and included in parent lineage's proportion. AY.1 and AY.2 are aggregated with B.1.617.2.

Missouri
(as of 7.6.2021)

B.1.1.7 – 21.4%
B.1.617.2 – 73.3%
P.1 – 1.8%
Other – 3.3%

MSPHL Variant Sequencing Data, 7.6.2021



Missouri COVID-19 Vaccinations (7.12.2021)

Overall Vaccinations in Missouri

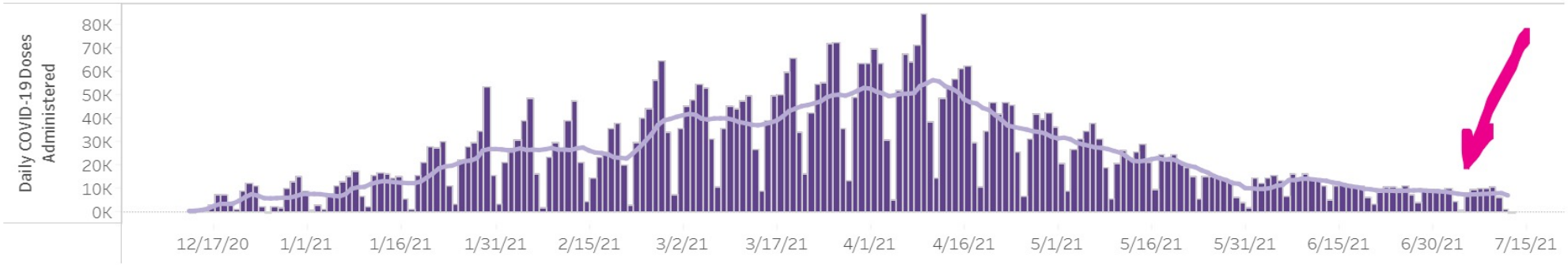
This dashboard was last updated on **7/12/2021** and contains data on vaccinations adminstered through **7/12/2021**. Historical numbers, especially over the most recent few days, will update as providers report data to the state. Differences between this dashboard's numbers and those on CDC's dashboard are primarily due to timing.

Total doses administered (includes first and second doses)	Number of people who have initiated vaccination	Number of people who have completed vaccination
5,048,186	**2,782,295**	**2,437,868**

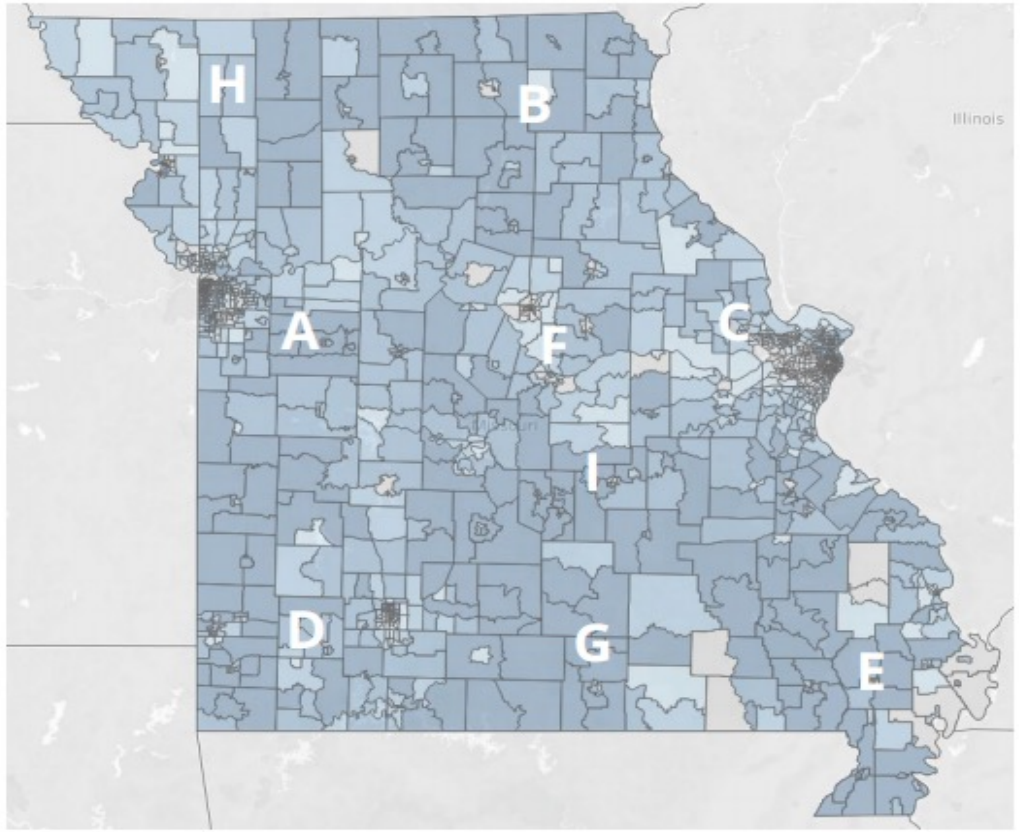
Doses administered in past 7 days (7/3/2021 through 7/9/2021)	Share of population who has initiated vaccination	Share of 18+ population who has initiated vaccination
51,488 (average of 7,355 per day)	**45.3%** (39.7% have completed vaccination)	**55.9%** (49.3% have completed vaccination)

Doses Administered Over Time

Line represents 7-day average. Note that data from the most recent days may be incomplete because of delays in reporting.



Percent Unvaccinated for Eligible Populations



Unvaccinated Quintiles (%)

- 0.0% - 42.6%
- 42.7% - 52.7%
- 52.7% - 58.9%
- 58.9% - 65.2%
- 65.2% - 92.5%

REGIONS

	A	B	C	D	E	F	G	H	I	Statewide
VACCINATION GAP (#)	632k	92k	945k	427k	154k	191k	68k	103k	90k	2,702K
% UNVACCINATED WITHIN REGION	54.55%	62.58%	48.00%	59.10%	61.62%	48.76%	67.76%	55.71%	67.47%	53.43%

Delta Variant Virus

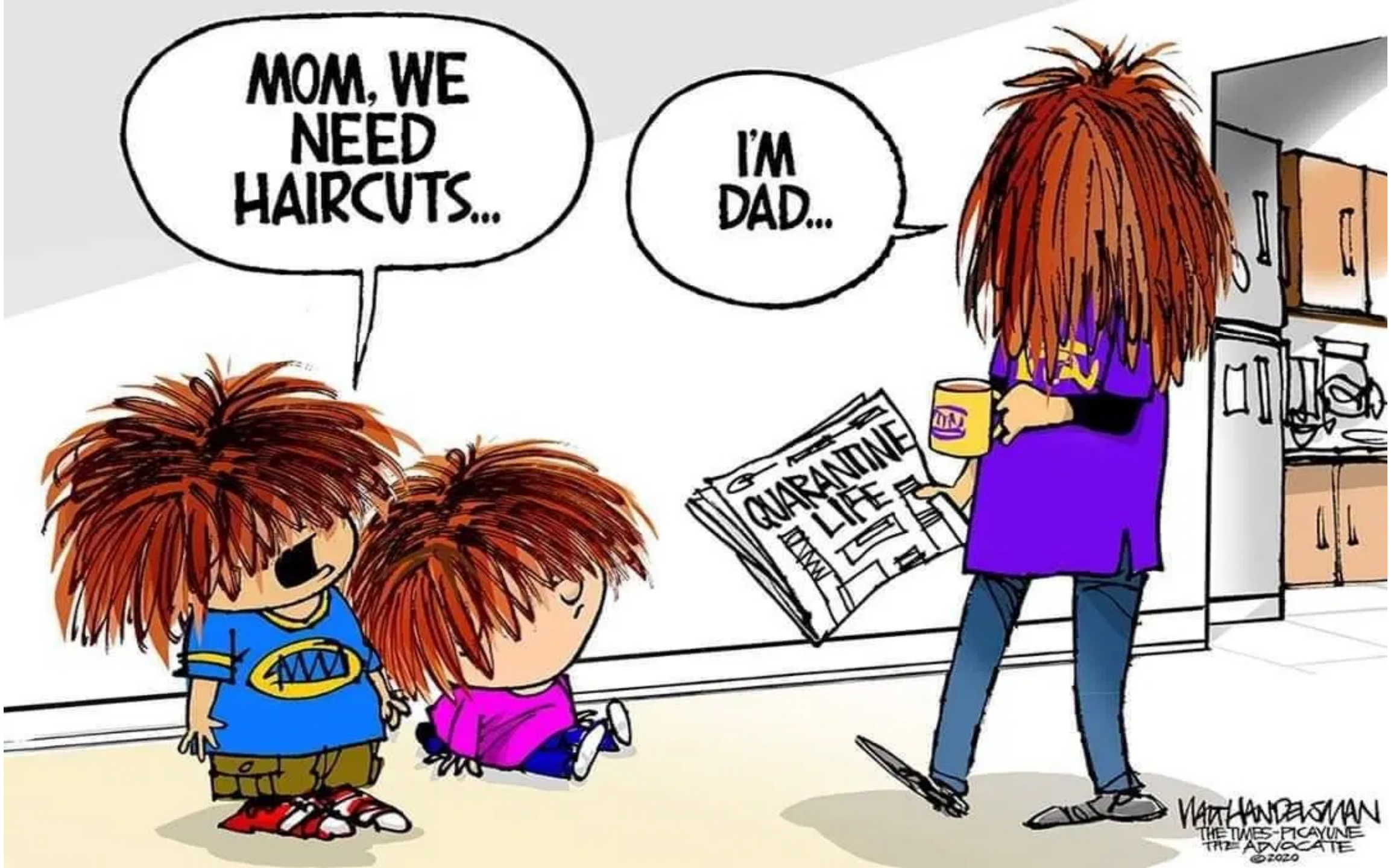
- ***Delta*** (B.1.617.2), previously India variant, is SARS-CoV-2 with new mutation which originally surfaced in India in December, 2020
- ***Delta*** virus is now detected in over 85 countries
- In USA, ***Delta*** rose from 1% of all variant viruses in May to 51% in early July
- 40-60% more transmissible than the *Alpha* variant (PHE)
- ***Delta*** was 64% more transmissible than *Alpha* when it came to household transmission (PHE)
- Scotland: people with ***Delta*** variant twice as likely to be hospitalized as those with *Alpha*
- Potential reduction in neutralization by some EUA monoclonal antibody treatments
- Potential reduction in neutralization by post-vaccination sera
- ? Herd Immunity Change

Delta Variant and Vaccines

- ***Pfizer* 87.9%** effectiveness with **Delta** variant, but only 33% after one dose (UK)
- Effectiveness of single dose of ***Pfizer*** with other variants was 61% against symptomatic disease; single dose of ***Moderna*** 72% effective against symptomatic disease in those under-40s (PHE)
- **J&J** vaccine estimated **85%** effective against severe disease and hospitalization and death
- **J&J** vaccine showed strong neutralizing antibody response that does not wane; actually improved over time through at 8 months

Delta Variant Virus and Vaccines

- Data from Israel Health Ministry
- About 57% of Israel population is fully vaccinated
- mRNA (Pfizer) vaccine protected **64%** of people against illness in June-early July, down from previous 94.3%
- Its effectiveness at preventing hospitalization/serious illness fell to **93%**, compared to 98.2% with other variants
- **? 55%** of newly infected had been vaccinated
- Rise in coronavirus cases in Israel may reflect testing vaccinated people for coronavirus infection, even if they have no symptoms


MOM, WE NEED HAIRCUTS...
I'M DAD...
QUARANTINE LIFE
MATT HANDELSMAN
THE TIMES-PICAYUNE
THE ADVOCATE
©2020

SARS-CoV-2 Variants in United States

- **Variants of Interest**: B.1.526 *(New York, Iota)*, P.2 *(Brazil, Zeta)*, B.1.427 and B.1.429 *(California, Epsilon)*, **B.1.617.1/B.1.617.1(India, *Kappa*)**
- **Variants of Concern**: **B.1.617.2** (**India**, ***Delta***), B.1.1.7 *(UK, Alpha)*, B.1.351 *(South Africa, Beta)*, P.1 (Brazil, Gamma)
- **Variants of High Consequence**: none
- Monoclonal antibody treatments may be less effective for treating cases of COVID-19 caused by variants with **L452R** or **E484K** substitution in S (spike) protein (lab data)

Delta Virus Infection

- Recent U.K. report found shift in symptoms
- Data from an app used by >4 million people in U.K. indicates that most common symptoms of Covid-19 are now ***headache, sore throat, runny nose and fever*** — similar to what people may experience with bad "cold"
- These data, however, have not yet been published in scientific journal
- May have implications for testing