MI COVID RESPONSE DATA AND MODELING UPDATE

August 23, 2021

Executive Summary – All Indicators Show Increases

Michigan remains at High Transmission

Percent Positivity (8.6%) is increasing for two months (up from 7.7% last week), and **Case Rate** (127.2 cases/million) have increased for two months (up from 102.0 last week)

- Michigan has 33rd lowest number of cases (30th last week), and 8th lowest case rate (5th last week) in the last 7 days
- 99% of positive tests available for sequencing in Michigan were **Delta variant** in the last 4 weeks

Percent of inpatient beds occupied by individuals with COVID (4.7%) has increased for five weeks (up from 4.0% last week).

- Michigan has 7th lowest inpatient bed utilization (9th last week), and 5th lowest adult ICU bed utilization (10th last week)

Deaths (1.2 deaths/million) are increasing for three weeks (0.6 deaths/million last week). 86 COVID deaths between Aug 10 and Aug 16.

- Michigan has the 40th lowest number of deaths (T28th last week), and T22nd lowest death rate (T16th last week) in the last 7 days

7-day average **state testing rate** is steady at 2,131.7 tests/million/day. **Daily diagnostic tests (PCR)** is 20.7K per day, and the **weekly average for PCR and antigen tests** conducted in Michigan is 37.3K.

10.07 million **COVID-19 vaccine** doses administered, 50% of population is fully vaccinated (4.99 million people)

Science Round Up

- COVID-19 Delta outbreaks have already led to numerous school closures throughout the United States
- Michigan cases are growing at similar rates to states with Delta surges
- Delta wave in Michigan could lead to even more pediatric COVID hospitalizations this fall than we experienced last spring
- In the last thirty days, people who are not fully vaccinated developed COVID-19 at a rate **7** times that of fully vaccinated people and experienced COVID deaths at a rate **30** times that of fully vaccinated people
- Vaccine protection against hospitalization remains strong across different studies and settings.

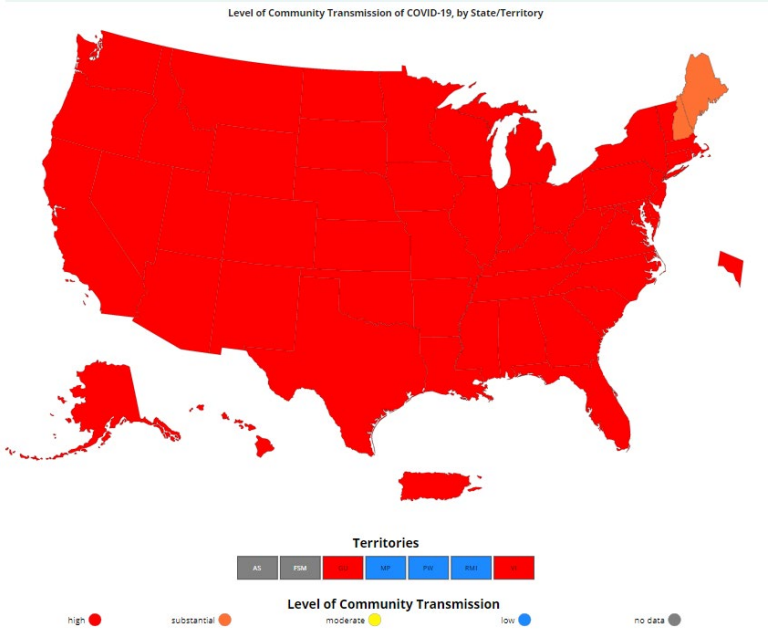
Global and National Comparisons: US cases increasing

What we see today (data through 8/23):

- Globally, 212,023,982 cases and 4,435,004 deaths*
- Countries with the highest case count are U.S. (37,711,159), India (32,449,306), and Brazil (20,570,891)*
- Nearly all US jurisdictions have high community transmission†
- States with the highest seroprevalence (national seroprevalence: 21.6% through end of June)†:

State	Est. Seroprevalence	95% CI
1. Ohio	37.3%	34.3% - 40.4%
2. Illinois	35.4%	31.8% - 39.1%
3. Wisconsin	32.9%	29.4% - 36.8%
4. Texas	32.2%	28.1% - 36.0%
11. Michigan	**27.8%**	**25.0% - 31.2%**

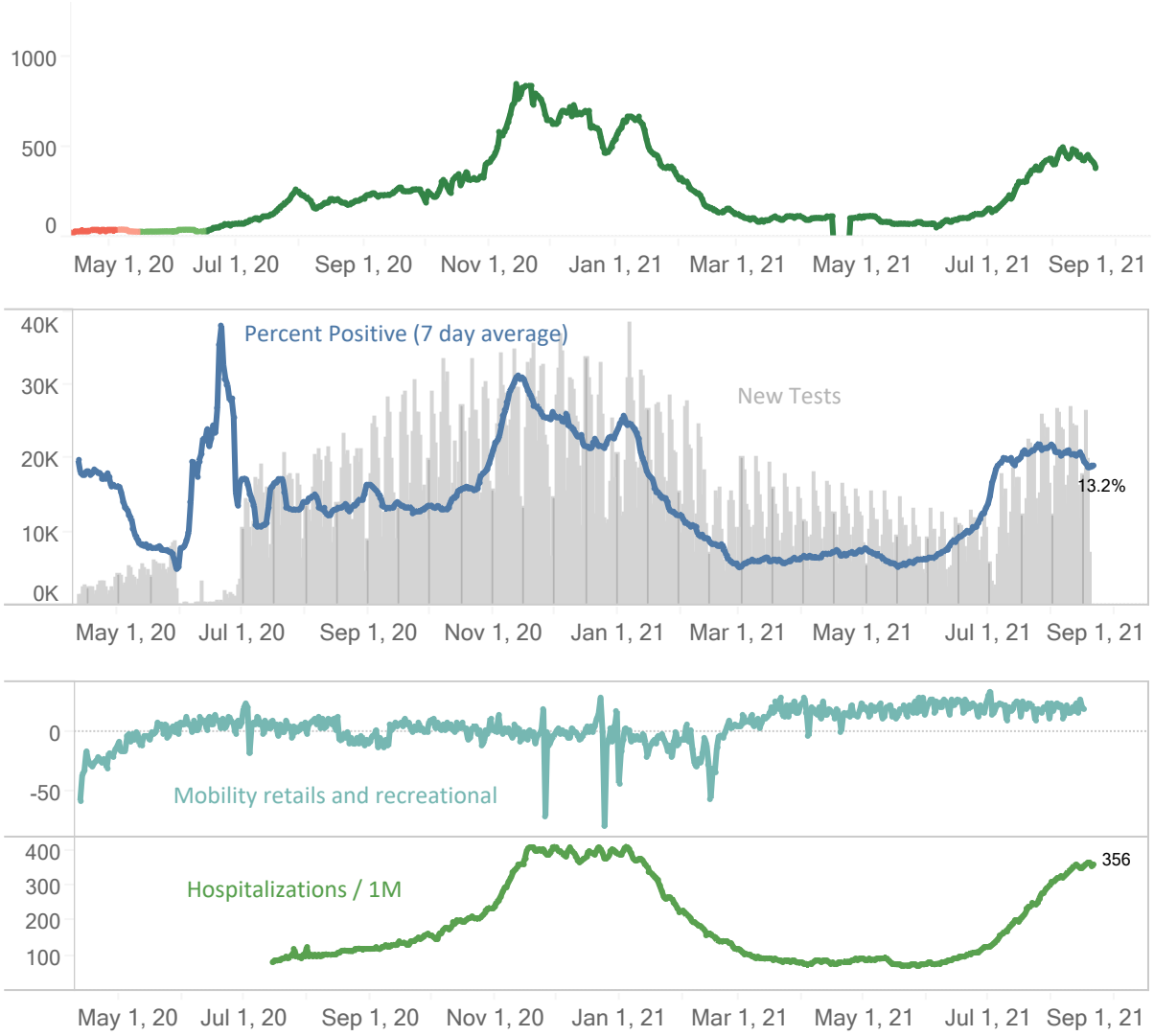
– Other notable states: AL (29.2%), AR (22.9%), GA (14.4%), FL (24.1%), LA (12.7%), MO (26.5%), MS (31.5%), TN (29.2%)



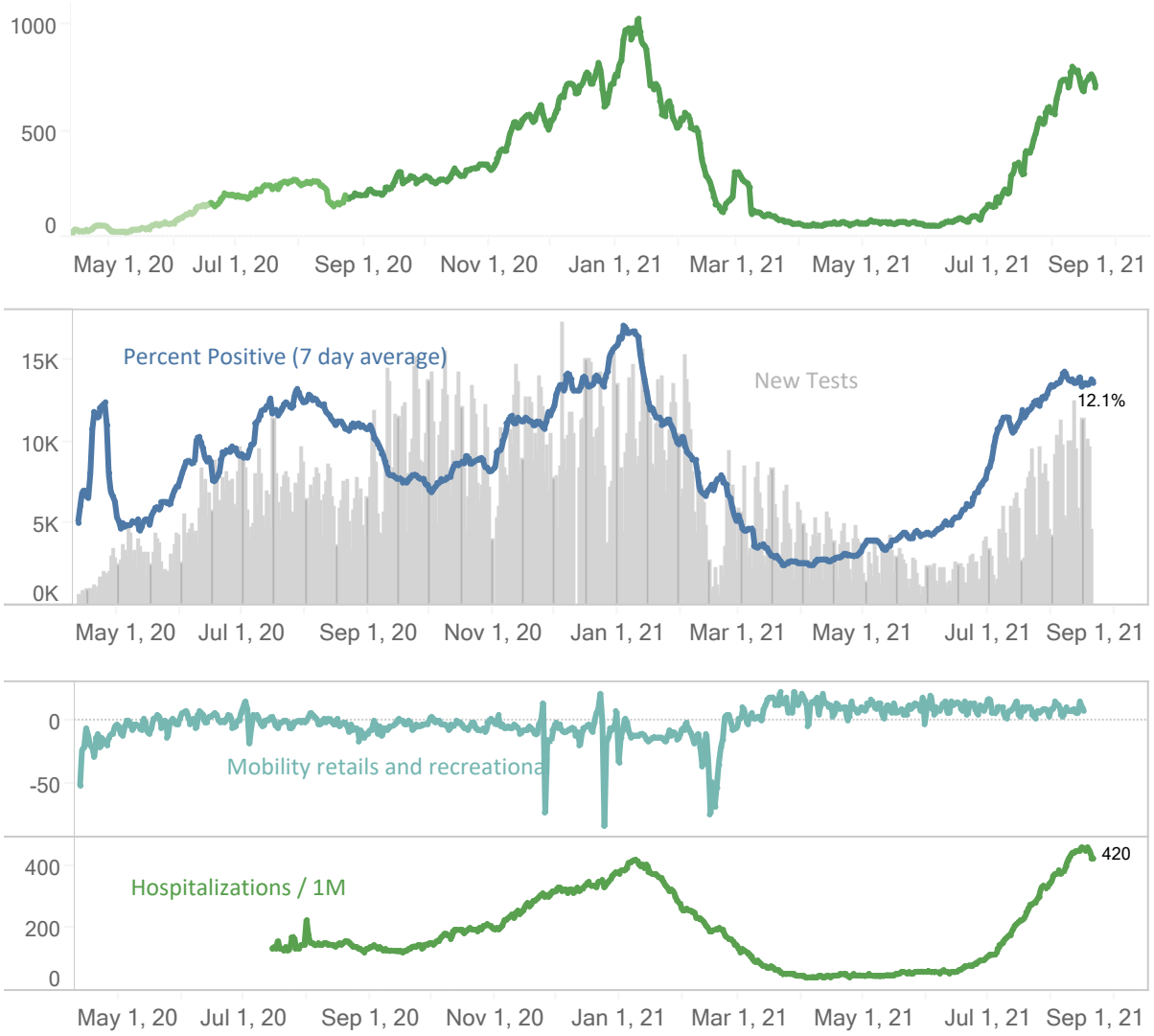
Source: * Johns Hopkins COVID-19 Dashboard; † CDC COVID Data Tracker

State Comparisons: Missouri and Arkansas

Missouri Confirmed New Cases / 1M (7 days average)

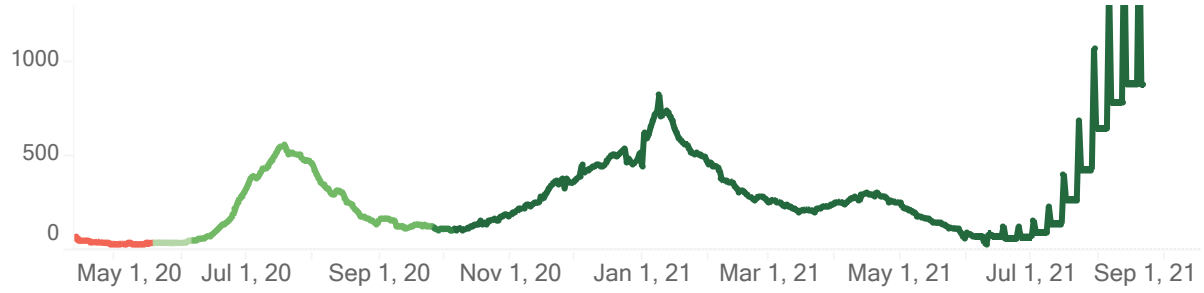


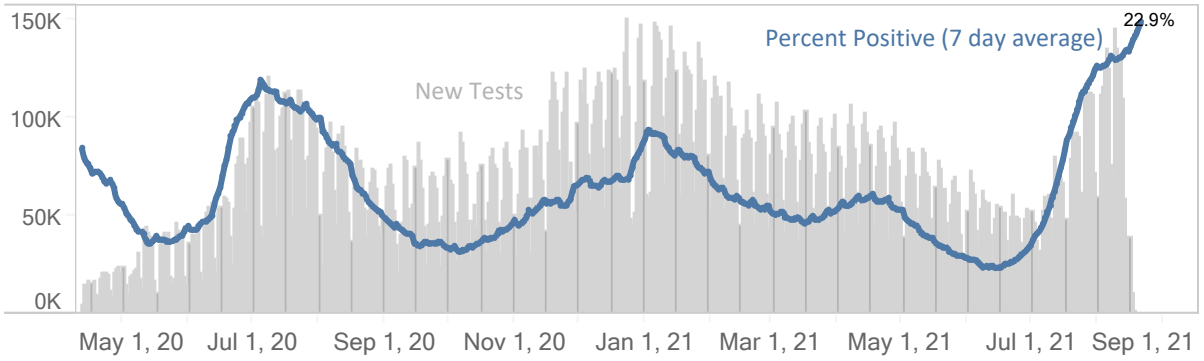
Arkansas Confirmed New Cases / 1M (7 days average)

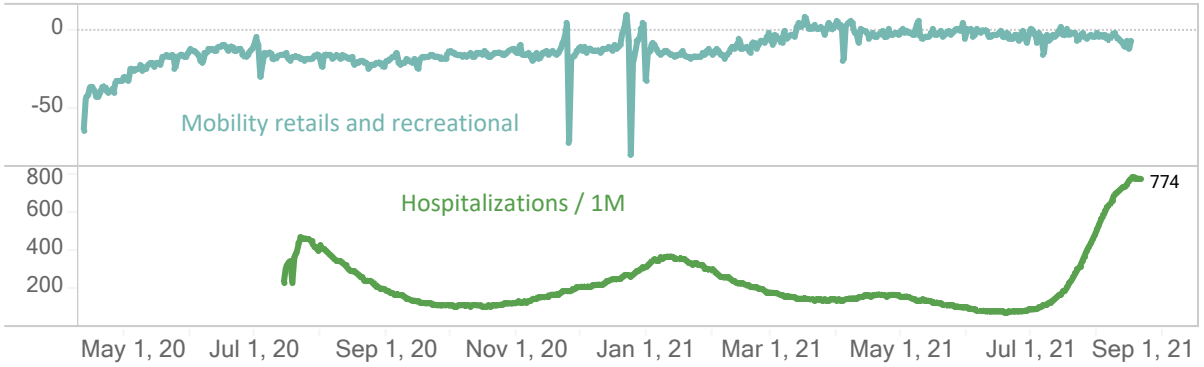


State Comparisons: Florida and Michigan

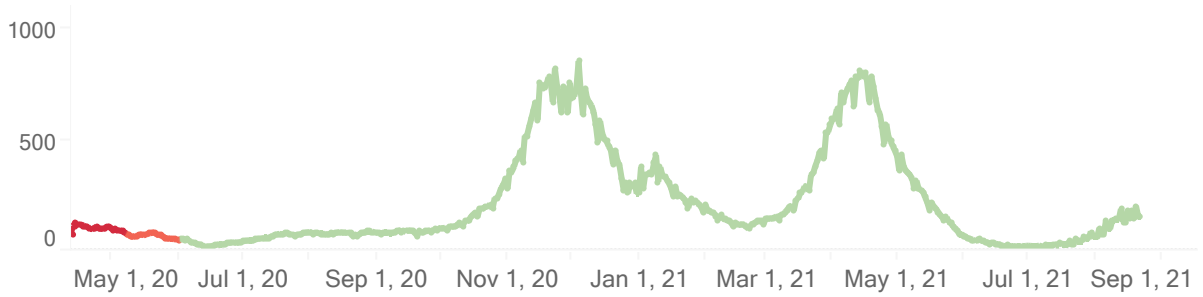
Florida Confirmed New Cases / 1M (7 days average)

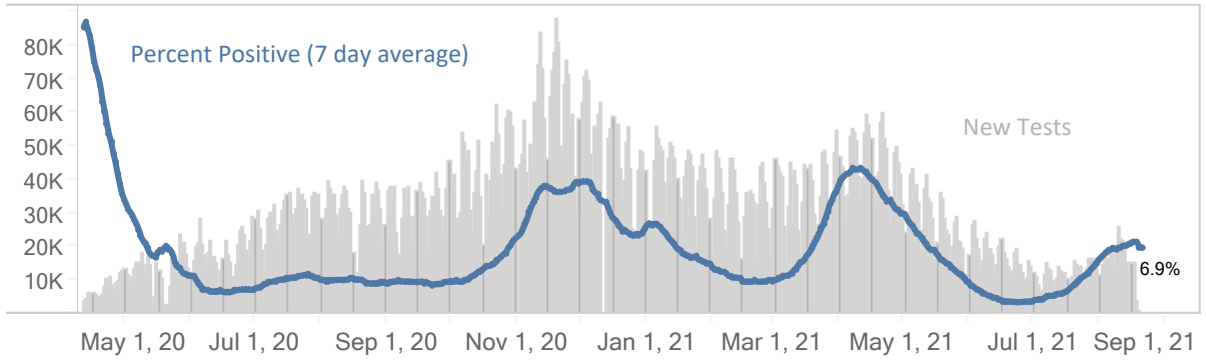


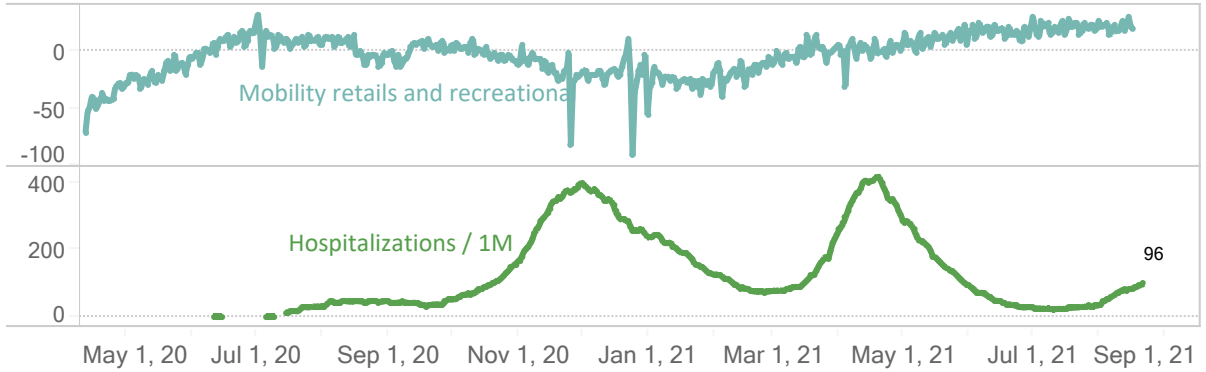




Michigan Confirmed New Cases / 1M (7 days average)

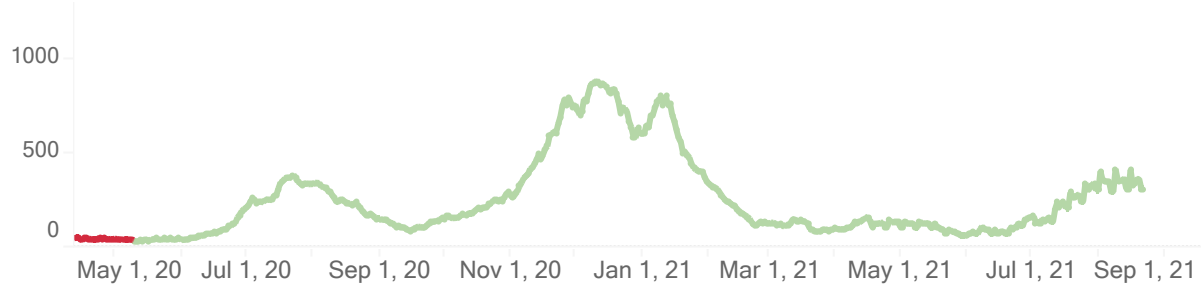


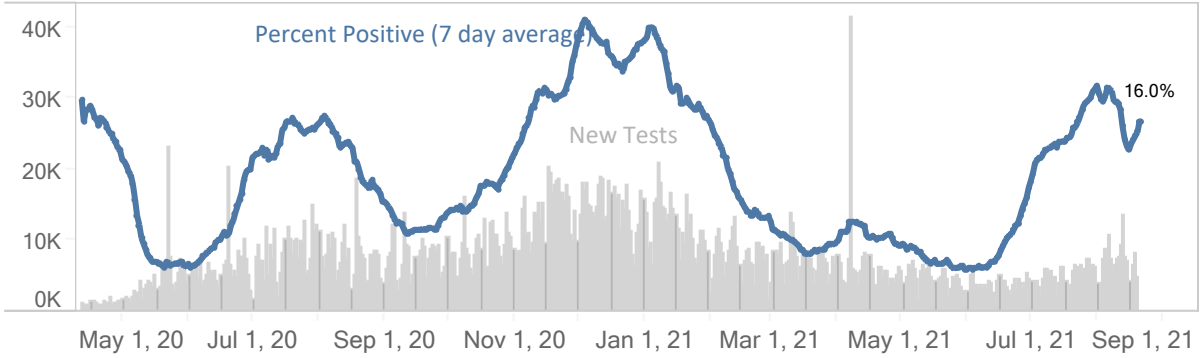


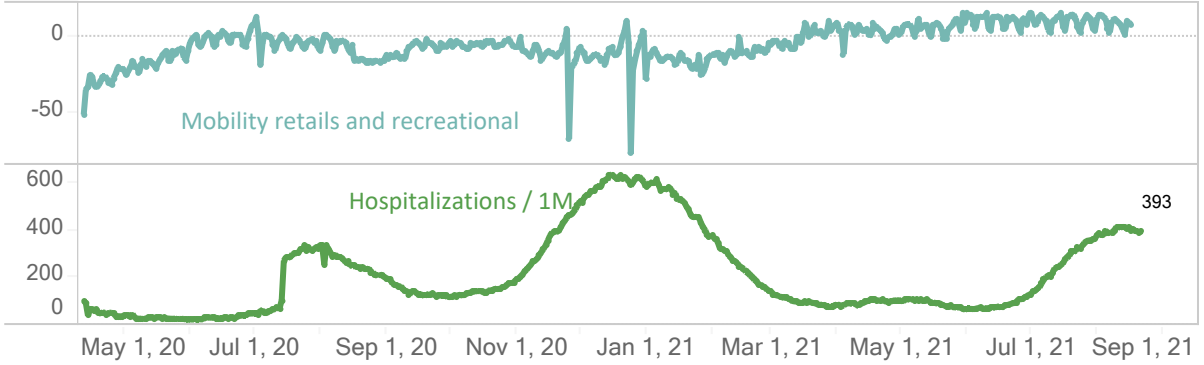


State Comparisons: Nevada and Louisiana

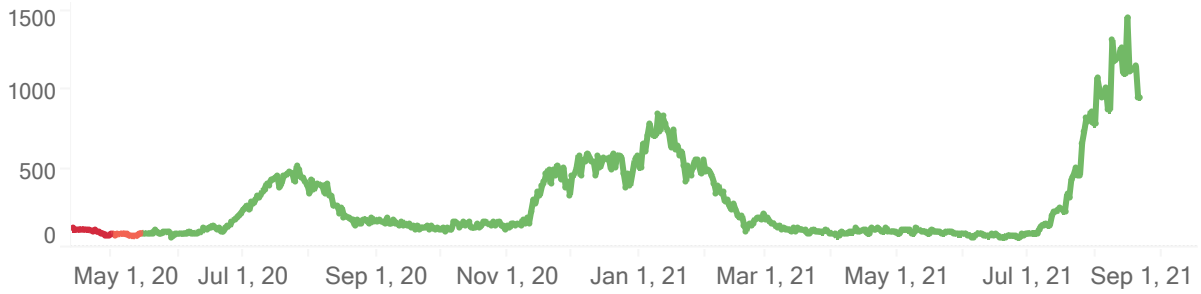
Nevada Confirmed New Cases / 1M (7 days average)

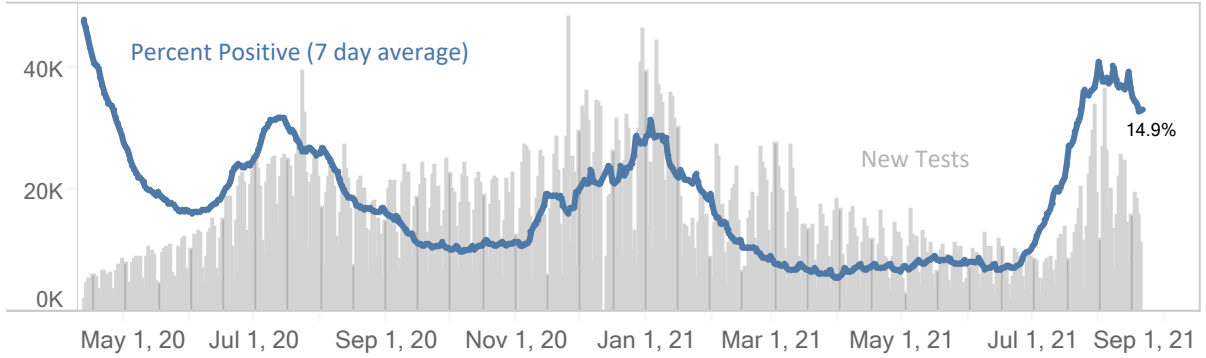


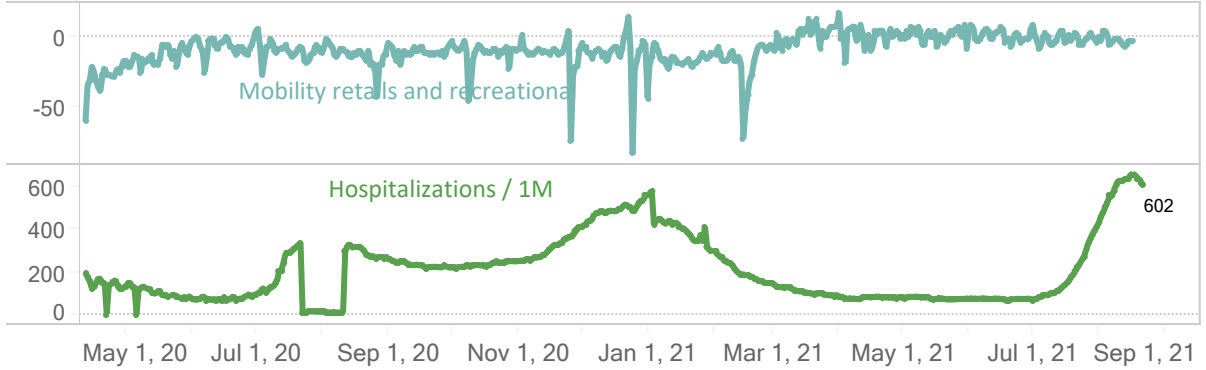




Louisiana Confirmed New Cases / 1M (7 days average)







Key Messages: COVID-19 is Spreading Faster with Delta

Statewide positivity has increased to 8.6% (last week: 7.7%)

- One week percent change is up 11% (vs. up 11% last week)
- Increasing for two months (Jun 26 low of 1.2%)
- Positivity is increasing in all MERC regions; five regions are >7% and three regions > 10%

Case rate (127.2 cases/million) increasing for two months (last week: 102.0 cases/million)

- One week increase of 10% (vs. 15% increase last week)
- Increasing for two months (Jun 26 low of 14.0 cases/million)
- Cases per million are increasing in all MERC regions

Michigan is at High Transmission level

- More than three quarters of the counties in Michigan are at high transmission level
- CDC recommends all individuals, regardless of vaccination status, should mask indoors
- The U.S. is at high transmission level (262.3 cases/100,000 in last 7 days) with 54 states/territories in substantial or high transmission

Number of active outbreaks is up 48% from last week

- Eighty-three new outbreaks were identified in the past week
- SNF/LTC reported the most new and ongoing outbreaks this week

Confirmed and probable case indicators

Table Date: 8/23/2021 (7 days from date table was produced: 8/16/2021)

Risk levels: Low, A, B, C, D, E

	CDC Transmission Risk Level	Absolute Cases (per million)	CDC Case Trend	Average Percent Positivity	Positivity Trend	Tests (per million)	Tests (per million) [PCR + Antigen]	% IP Beds Occupied by COVID-19 Cases	% Occupied IP Beds Trend	Absolute Deaths (per million)	Death Trend
Detroit	High	118.7	elevated incidence plateau	7.2	Increase - 5wk	2244.3	2728.1	4.6	Increase - 5wk	1.1	Decrease - 1wk
Grand Rapids	High	128.6	elevated incidence plateau	10.8	Increase - 7wk	2141.5	2858.8	4.8	Increase - 5wk	0.7	<20 wkly deaths
Kalamazoo	High	158.0	elevated incidence plateau	11.8	Increase - 7wk	1817.9	2713.7	6.7	Increase - 3wk	1.5	<20 wkly deaths
Saginaw	High	126.4	elevated incidence plateau	9.7	Increase - 7wk	1641.6	2758.5	3.5	Increase - 4wk	2.8	<20 wkly deaths
Lansing	High	121.4	elevated incidence plateau	8.2	Increase - 1wk	1825.4	2649.9	6.0	Increase - 5wk	0.7	<20 wkly deaths
Traverse City	High	114.5	elevated incidence plateau	8.3	Increase - 1wk	1688.5	2539.3	4.2	Increase - 4wk	1.9	<20 wkly deaths
Jackson	High	152.6	elevated incidence growth	11.1	Increase - 7wk	2109.3	3264.0	6.7	Increase - 5wk	2.4	<20 wkly deaths
Upper Peninsula	High	175.9	elevated incidence growth	9.1	Increase - 4wk	1437.0	3402.6	3.4	Increase - 1wk	0.5	<20 wkly deaths
Michigan	High	127.2	elevated incidence plateau	8.6	Increase - 8wk	2131.7	2877.0	4.7	Increase - 5wk	1.2	Increase - 3wk

Cases: Low: <7; A: 7-20; B: 20-40; C: 40-70; D: 70-150; E: >=150

Positivity: Low: <3%; A: 3-7%; B: 7-10%; C: 10-15%; D: 15-20%; E: >=20%

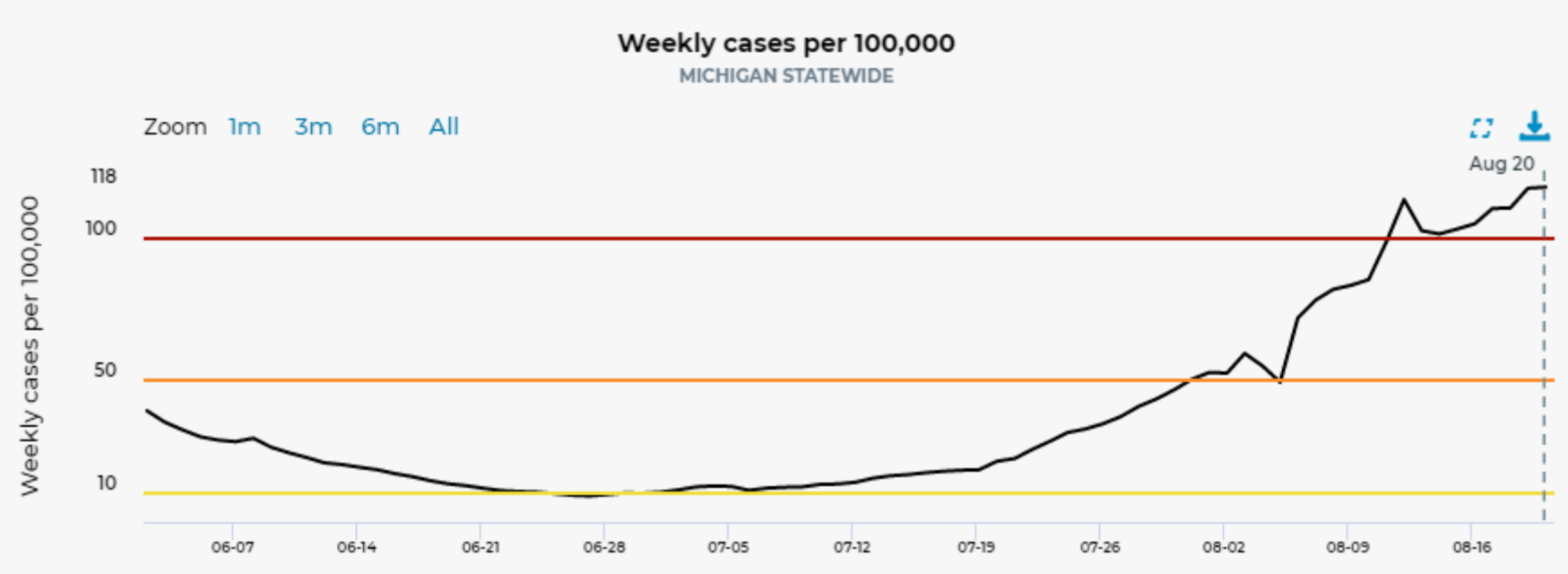
Overview of metrics for individuals <12 years

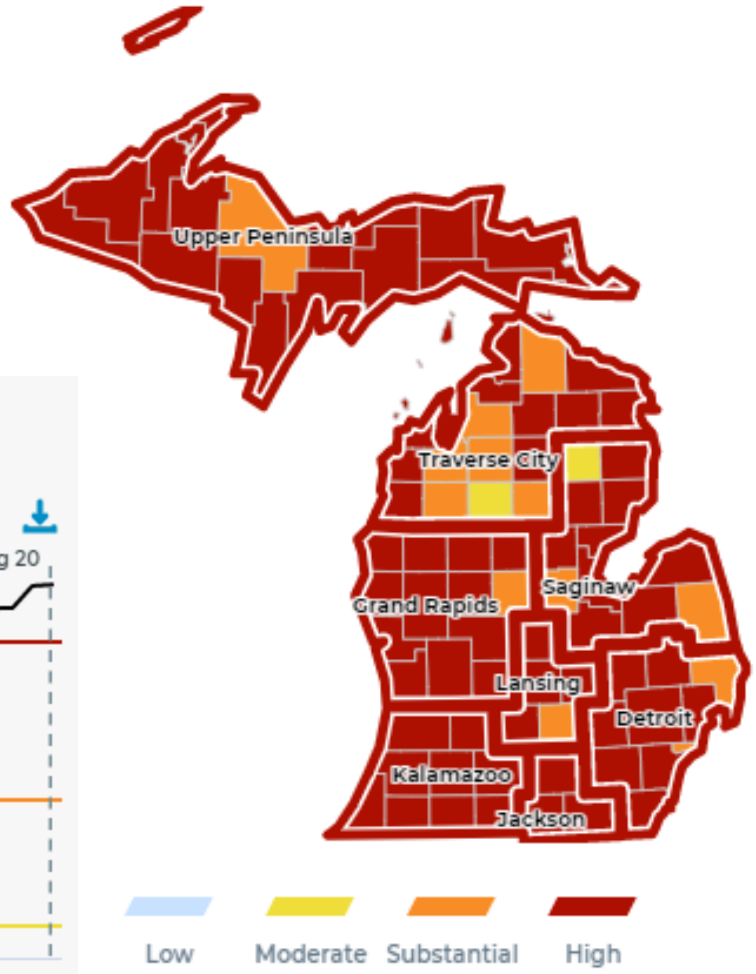
Region	Population (<12 yrs)	Population (<18 yrs)	Cumulative Case Count (<12 yrs)	7-day Average Daily Case Count (<12 yrs)	7-day Average Daily Case Rate per Million (<12 yrs)	7-day Average Daily Pediatric Hospitalization Count (<18 yrs)	7-day Average Daily Pediatric Hospitalization Rate per Million (<18 yrs)	7-day Average Daily Death Count (<12 yrs)
Detroit	735529	1134247	30439	64.3	87.4	16.9	14.9	0
Grand Rapids	230120	350652	10348	22.1	96.0	3.4	9.7	0
Kalamazoo	140422	214801	5671	12.0	85.5	1.1	5.1	0
Saginaw	78759	122834	3405	4.6	58.4	0.0	0.0	0
Lansing	78140	119915	3385	8.4	107.5	1.6	13.3	0
Traverse City	53099	83462	1649	3.9	73.4	1.9	22.8	0
Jackson	41274	64091	1581	3.6	87.2	1.0	15.6	0
Upper Peninsula	34645	53875	1497	5.7	164.5	0.0	0.0	0
Michigan	1391988	2143877	58034	125.0	89.8	25.9	12.1	0

Note: Data as of 8/23; case data 8/16, hospitalization data 8/23. Hospitalization data is for pediatric patients (<18)

Michigan at High Transmission Level

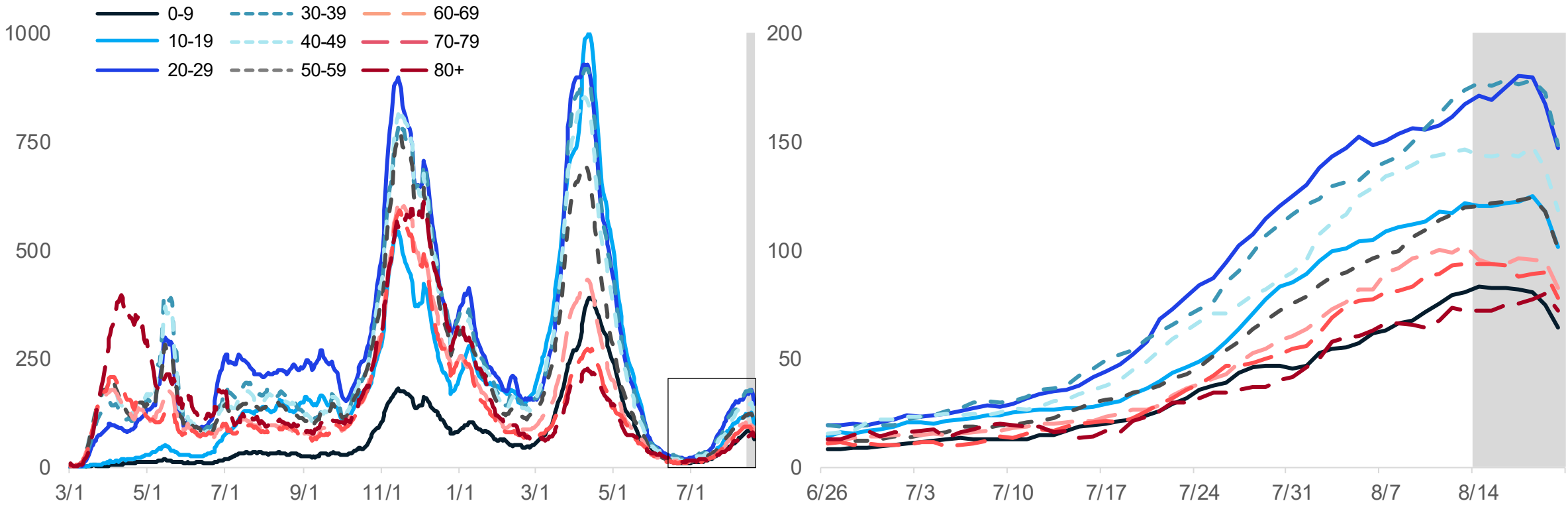
Dashboard | CDC | MI Start Map for most recent data by reporting date





Case Rate Trends are Increasing for All Age Groups

Daily new confirmed and probable cases per million by age group (7-day rolling average)



- Case rate trends for all age groups are increasing
- Case rates for all age groups are between 70 and 180 cases per million (through 8/16)
- Case rate trends are highest for 30-39-year-olds followed by 20-29, 40-49, 10-19, and 50-59

Note: Case information sourced from MDHHS and reflects date of onset of symptoms
Source: MDHHS – Michigan Disease Surveillance System

Number of Cases and CaseRates are Increasing for Most Age Groups

Daily new confirmed and probable cases per million by age group (7-day rolling average)

Age Group	Average† daily cases	Average† Daily Case Rate	One Week % Change (Δ #)
0-9	97.4	84.5	21% (+17)
10-19	159.0	126.7	12% (+16)
20-29	**230.7**	**167.2**	6% (+13)
30-39	218.0	**179.7**	19% (+34)
40-49	170.1	**144.3**	3% (+1-5)
50-59	167.1	123.8	15% (+22)
60-69	123.3	96.6	-1% (-1-5)
70-79	73.1	95.4	12% (+8)
80+	29.9	72.1	7% (+1-5)
Total¶	1275.1	127.2	10% (+120.4)

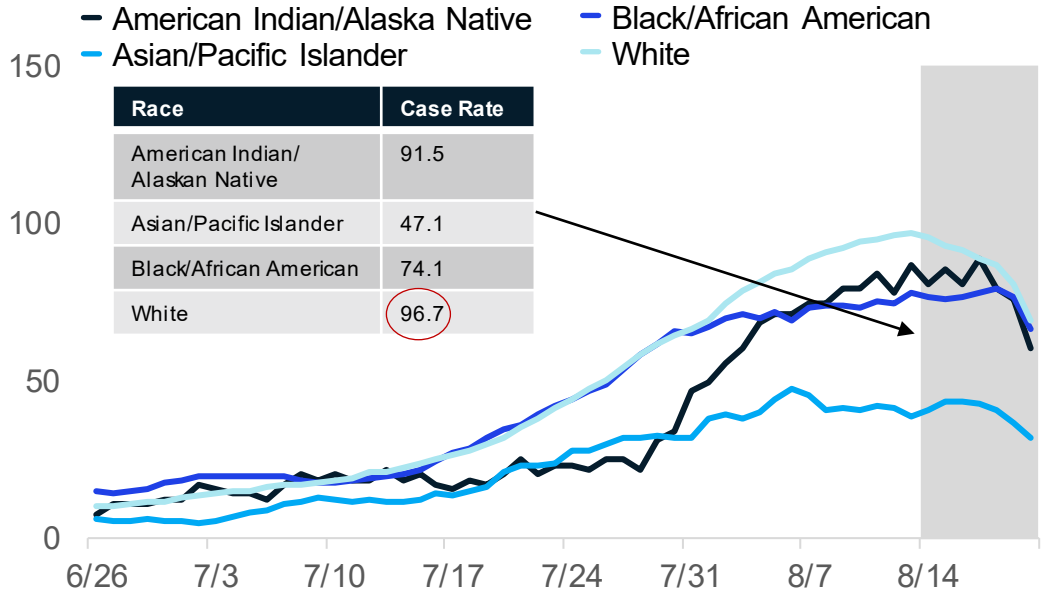
† Rolling 7-day average
Note: Case information sourced from MDHHS and reflects date of onset of symptoms
Source: MDHHS – Michigan Disease Surveillance System

- Average daily number of cases (231) is highest for those aged 20-29
- Avg. daily case rate (179.7 cases/mil) is currently highest for 30-39
- Case rates for all age groups are between 70-180 cases per million
- Case rate trends are increasing for all age groups
- Case rates bottomed out on June 26, 2021

* Highest 7-day avg. following spring 2021 surge
¶ Total may not reflect state due to missing age data

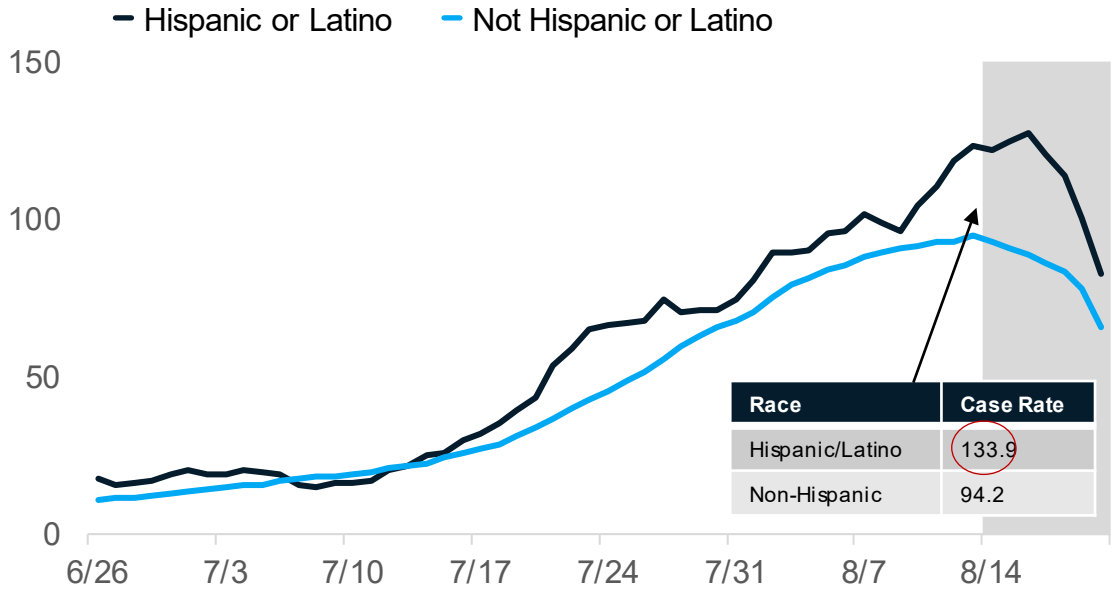
Racial and Ethnic Case Rates are Increasing

Daily new confirmed and probable cases per million (7 day rolling average) by race category



Race	Case Rate
American Indian/ Alaskan Native	91.5
Asian/Pacific Islander	47.1
Black/African American	74.1
White	96.7

Daily new confirmed and probable cases per million (7 day rolling average) by ethnicity category



Race	Case Rate
Hispanic/Latino	133.9
Non-Hispanic	94.2

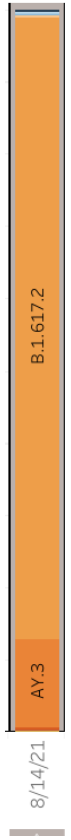
Updates since last week:

- Cases per million are increasing for all races and ethnicities
- **Hispanics and Whites have the highest case rates**
- In the past 30 days, 20% (↑3%) of race data and 24% (↑4%) ethnicity data was either missing or reported as unknown

Note: Case information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System

Identified COVID-19 Cases Caused by All Variants of Concern (VOC) in US and Michigan

Variants Circulating in United States, Aug 8 – Aug 14 (NOWCAST)



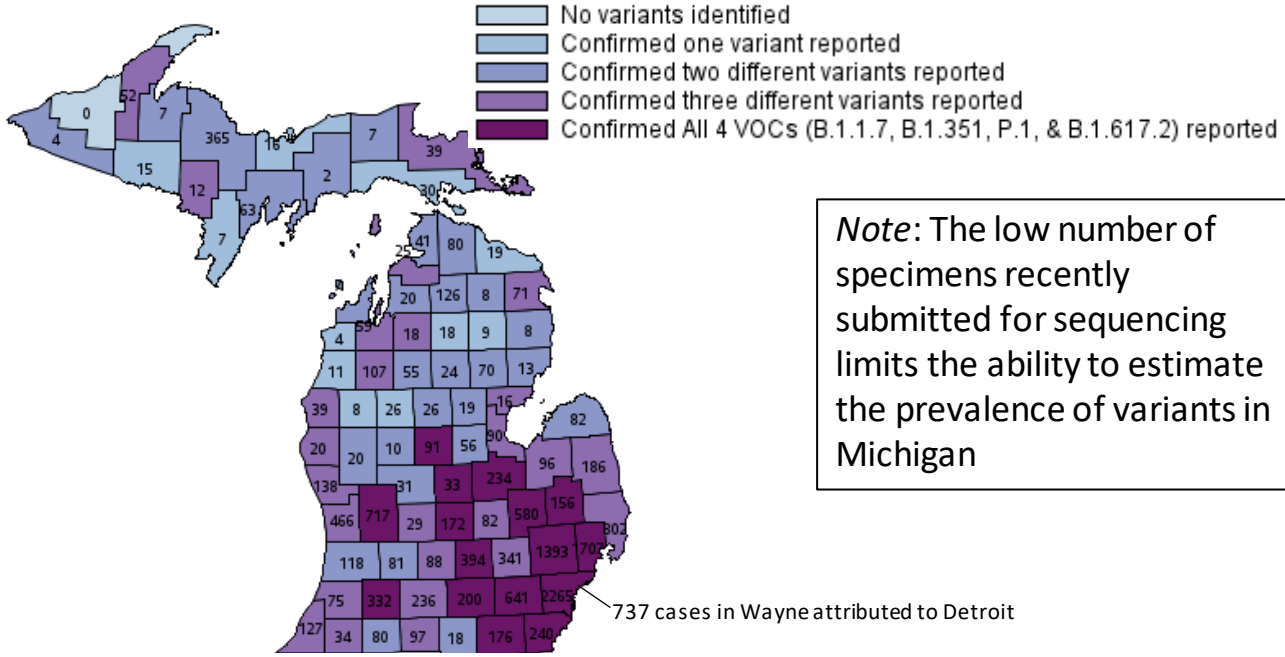
USA

WHO label	Lineage #	Type	%Total	95%PI
Alpha	B.1.1.7	VOC	0.3%	0.0-1.0%
Beta	B.1.351	VOC	0.0%	0.0-0.2%
Gamma	P.1	VOC	0.2%	0.0-0.7%
Delta	B.1.617.2	VOC	86.1%	82.6-89.4%
	AY.3	VOC	12.3%	9.1-15.7%
	AY.2	VOC	0.3%	0.0-1.0%
	AY.1	VOC	0.1%	0.0-0.2%
Eta	B.1.525	VOI	0.0%	0.0-0.2%
Iota	B.1.526	VOI	0.0%	0.0-0.2%
N/A	B.1.621		0.4%	0.0-1.0%
	B.1.621.1		0.1%	0.0-0.5%
	B.1.628		0.1%	0.0-0.5%
	A.2.5		0.0%	0.0-0.2%
	B.1.626		0.0%	0.0-0.2%
	B.1.617.1	VOI	0.0%	0.0-0.2%
	B.1.617.3	VOI	0.0%	0.0-0.2%
Other	Other*		0.0%	0.0-0.2%

* Enumerated lineages are VOI/VOC or are circulating >1% in at least one HHS region during at least one two week period; remaining lineages are aggregated as "Other".
** 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 are aggregated with the parent lineage and included in parent lineage's proportion. AY.3.1 is aggregated with its parent lineage AY.3. AY.4-AY.12 aggregated with B.1.617.2

Data last updated Aug 23, 2021
Source: https://covid.cdc.gov/covid-data-tracker/#variant-proportions and MDSS

Variants of Concern in Michigan, Aug 23



Note: The low number of specimens recently submitted for sequencing limits the ability to estimate the prevalence of variants in Michigan

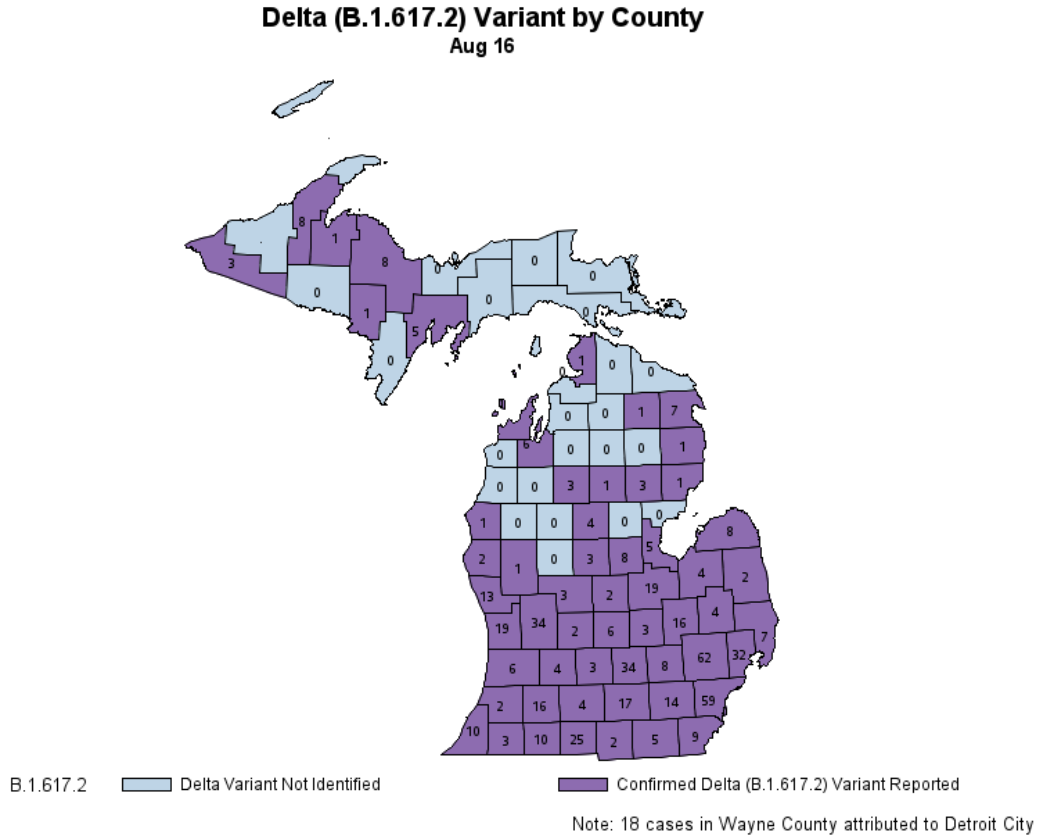
Variant	MI Reported Cases¶	# of Counties	% Specimens in last 4 wks
B.1.1.7 (alpha)	13,661*	81	<1%
B.1.351 (beta)	85	24	<1%
P.1 (gamma)	330	35	<1%
B.1.617.2 (delta)	**824**	**69 (↑11)**	**99%**

* 534 cases within MDOC; ¶ 37 cases with county not yet determined

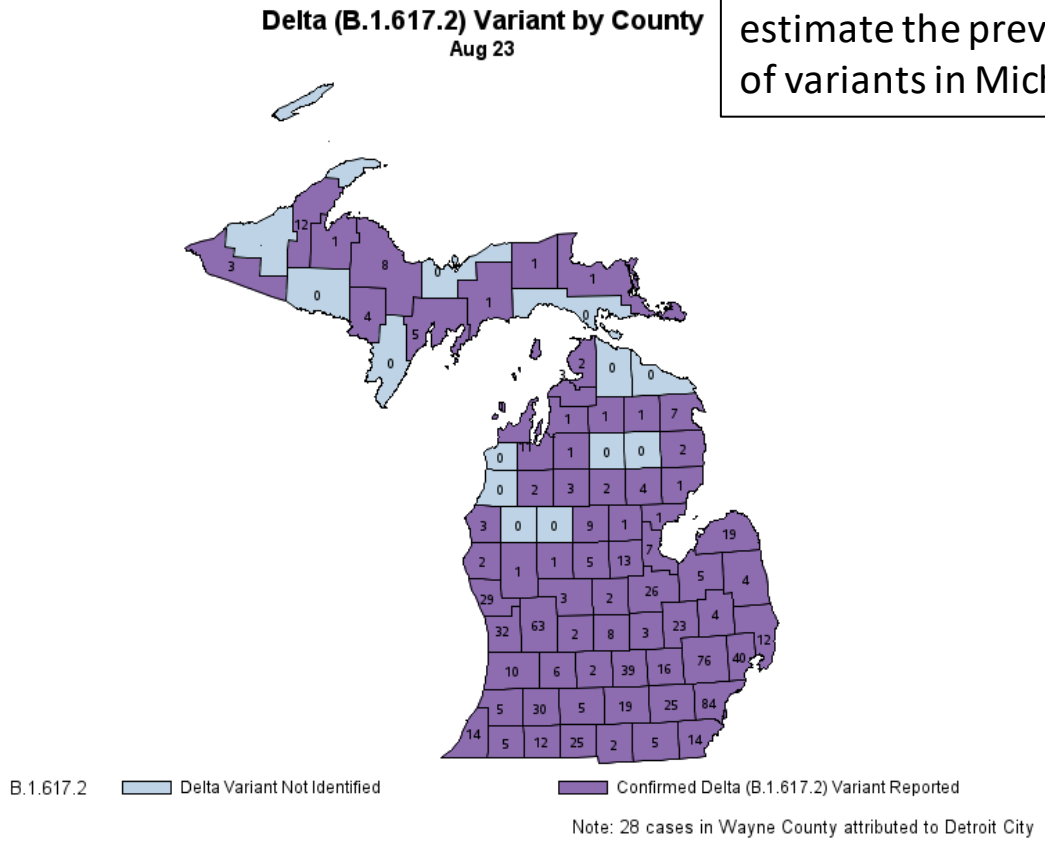
Identified COVID-19 Delta Variants by County

Note: The low number of specimens recently submitted for sequencing limits the ability to estimate the prevalence of variants in Michigan

Last week (Aug 16, 2021)*



This week (Aug 23, 2021)

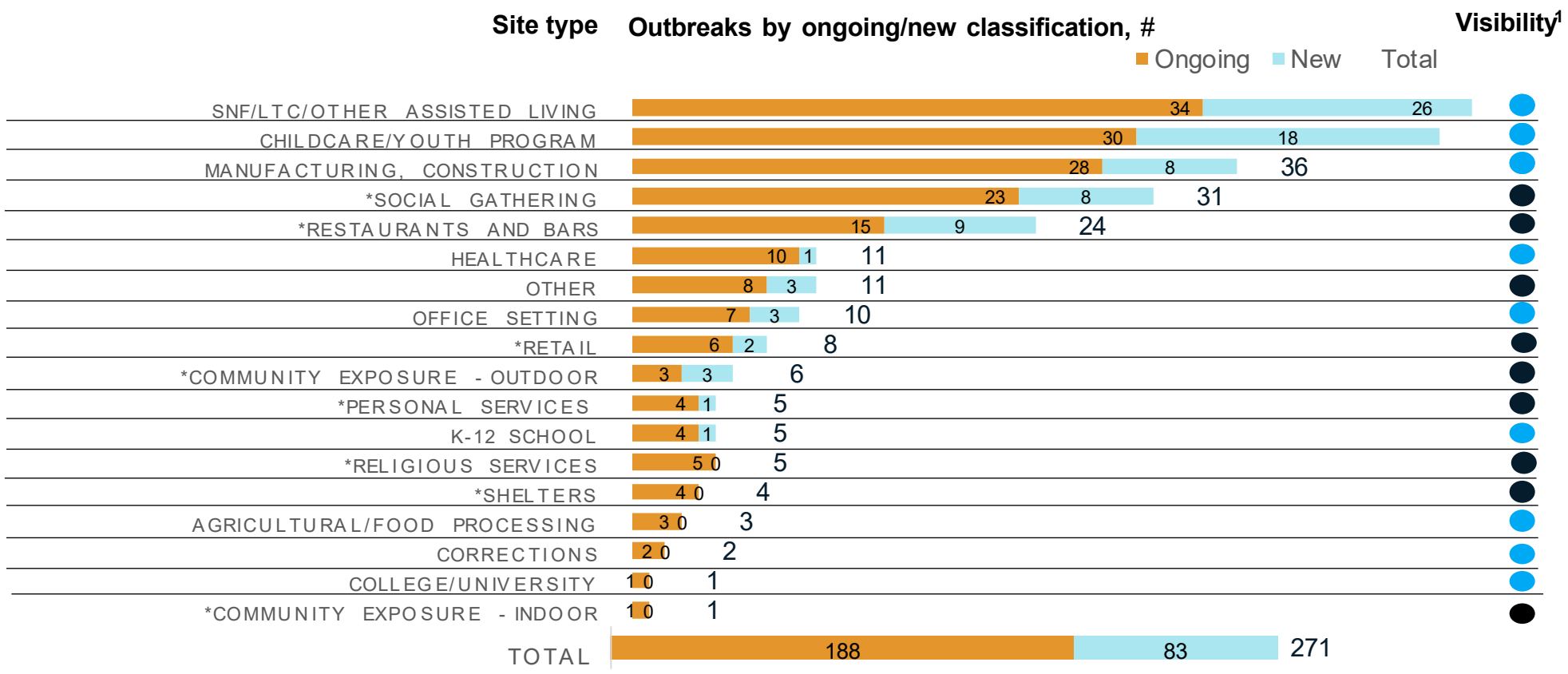


* Delta found in wastewater surveillance samples

Data last updated Aug 23, 2021
Source: MDSS

Number of Outbreaks Reported has Increased

Number of outbreak investigations by site type, week ending Aug 19



1. Based on a setting's level of control and the extent of time patrons/residents spend in the particular setting, different settings have differing levels of ability to ascertain whether a case derived from that setting

NOTE: Many factors, including the lack of ability to conduct effective contact tracing in certain settings, may result in significant underreporting of outbreaks. This chart does not provide a complete picture of outbreaks in Michigan and the absence of identified outbreaks in a particular setting in no way provides evidence that, in fact, that setting is not having outbreaks.

Source: LHD Weekly Sitreps

Total number of active outbreaks is **up 48%** from previous week, with 83 new outbreaks identified (3 fewer than last week)

SNF/LTC reported the greatest number of new outbreaks (26) this week, followed by childcare/ youth programs (18), restaurants/ bars (9), manufacturing/ construction and social gatherings (8 each) and seven other settings with at least 1 new outbreak in the last week.

Key Messages: COVID-19 and Healthcare Capacity and COVID Severity

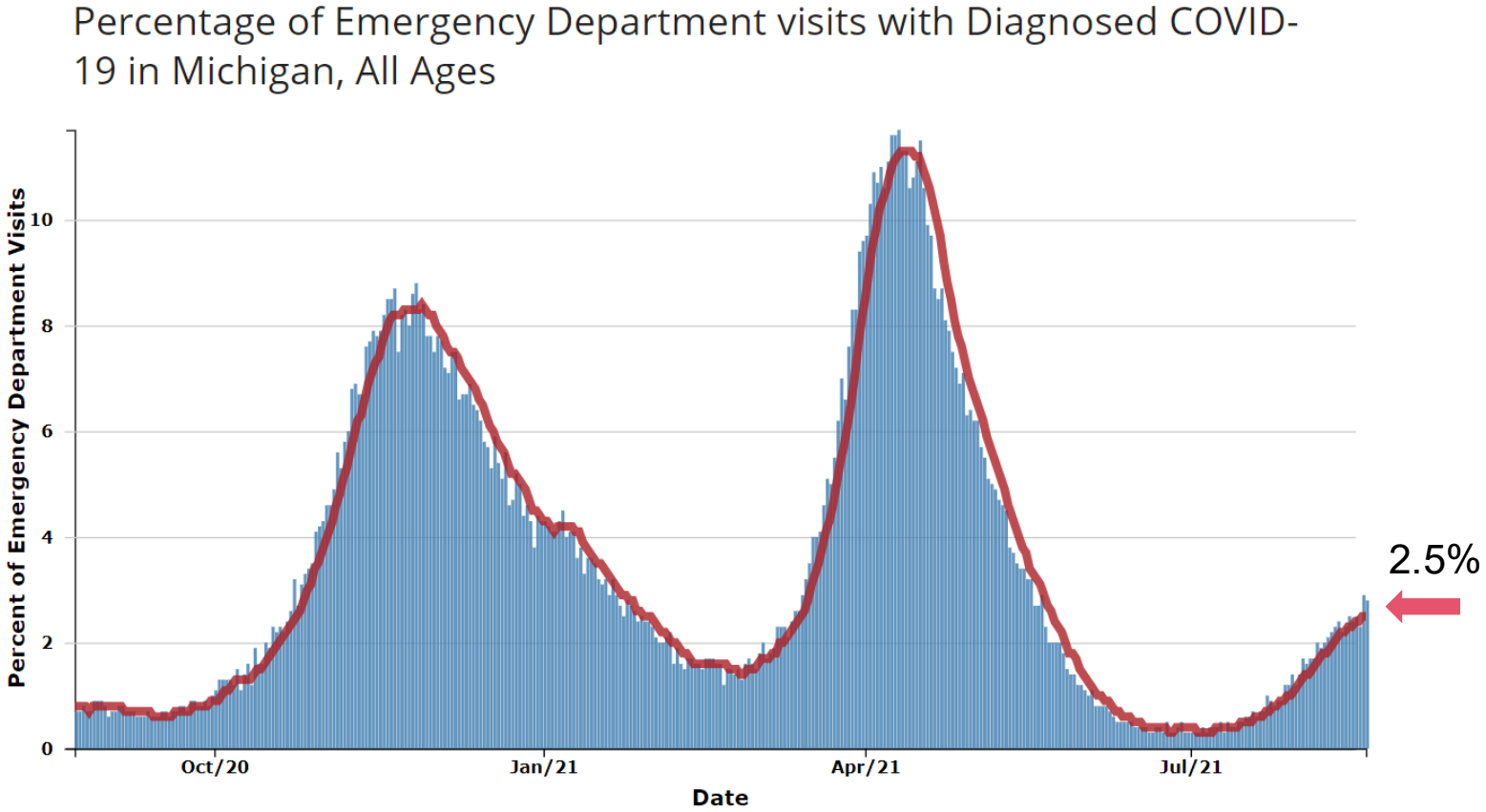
Hospitalizations and ICU utilization are increasing

- 2.5% of ED visits are for COVID-like illness (CLI) (up from 2.1% last week)
- Hospital admissions are increasing for all age groups this week
- Hospitalizations up 29% since last week (vs. 23% increase week prior)
- All regions are showing increasing trends in hospitalization trends this week, except Region 8 (plateau)
  - Hospitalization for COVID-19 is highest in Regions 2N, 2S, 3 and 6
  - Fastest growth is in Regions 5 and 7
- Volume of COVID-19 patients in intensive care has increased 26% since last week (vs. 15% increase last week)

Death rate is 1.2 daily deaths per million people

- Death rate has increased three weeks
- 200% increase since Jul 22 low
- 30-day proportion of deaths among those under 60 years of age is steady from the prior week

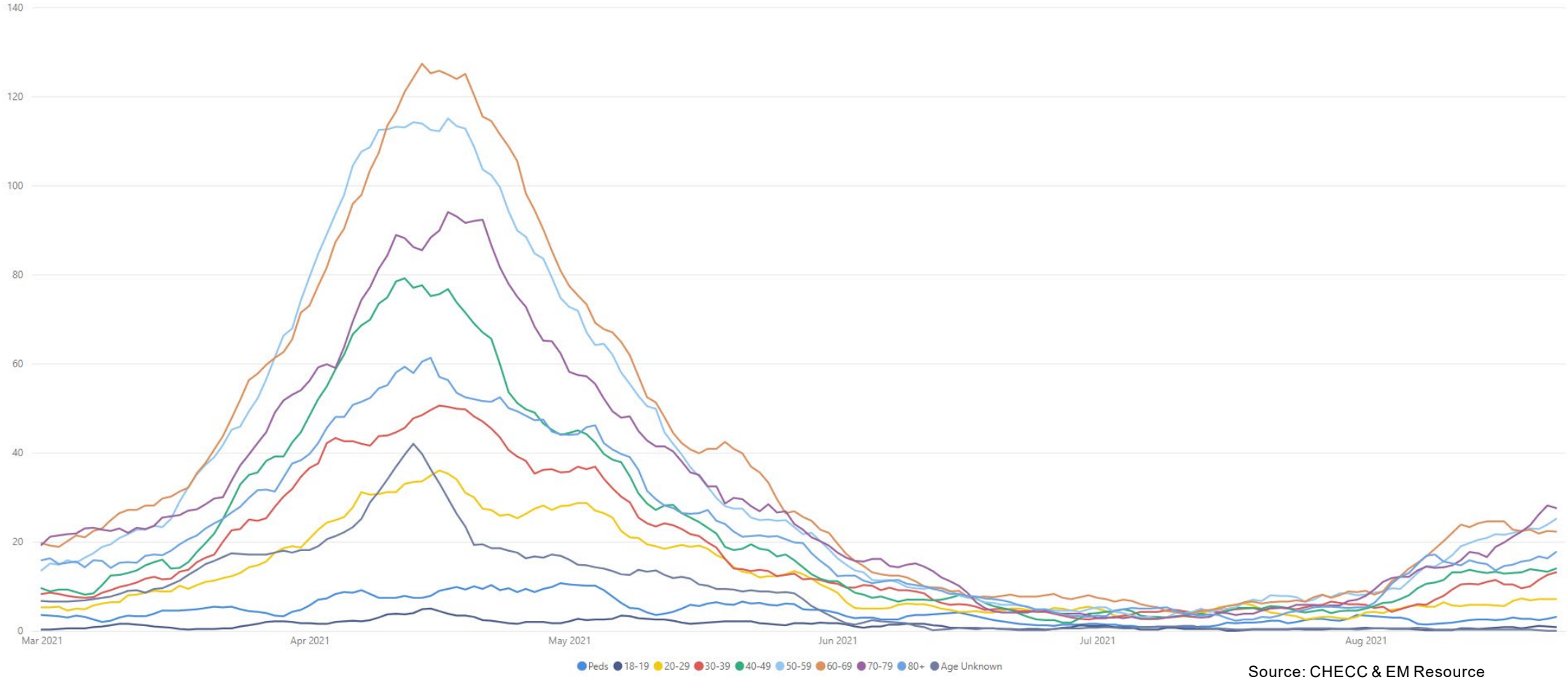
Michigan Trends in Emergency Department (ED) Visits for COVID-19-Like Illness (CLI) saw the largest increase in over 3 months



- Trends for ED visits have increased to 2.5% since last week (up from 2.1% week prior)
- Trends vary by age groups with all age groups seeing an increase
- Over past week, those 40-49 years saw highest number of avg. daily ED CLI visits, but those between 25 and 74 all above state average

Source: https://covid.cdc.gov/covid-data-tracker/#ed-visits

Average Hospital Admissions Are Increase for all Age Groups

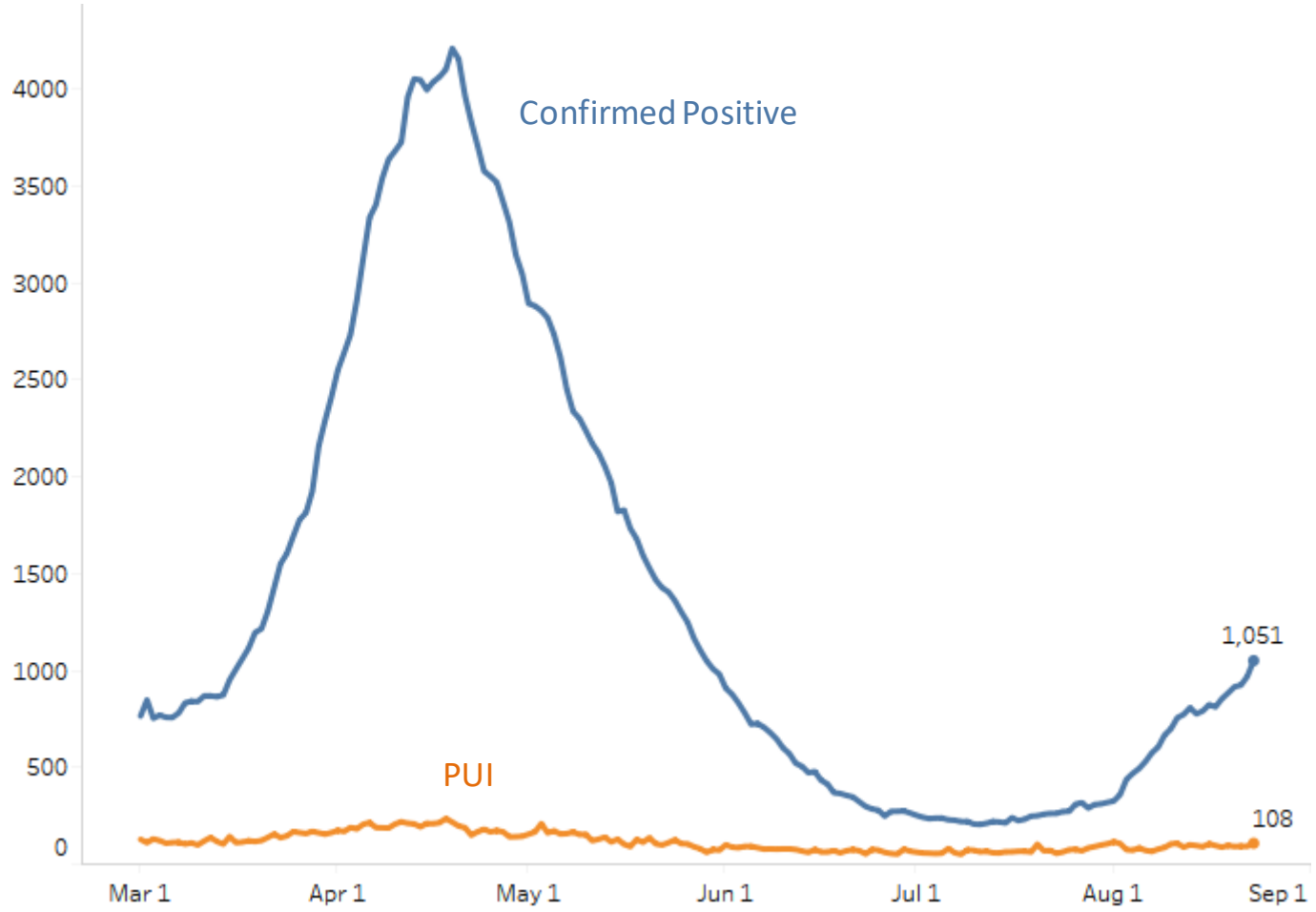


Source: CHECC & EM Resource

- Trends for daily average hospital admissions have increased 5% since last week (vs. 28% increase prior week)
- This week, all age groups have experienced increases in daily hospital admissions
- Over the past week, those 50-59 years have seen the highest number of avg. daily hospital admissions (25 admissions)

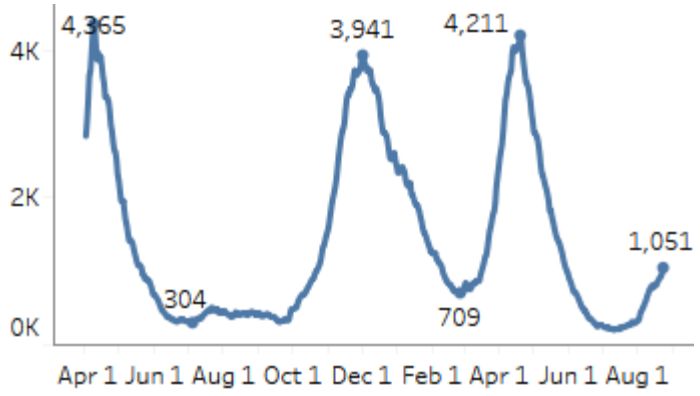
Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 3/1/2021 – 8/23/2021
Confirmed Positive & Persons Under Investigation (PUI)



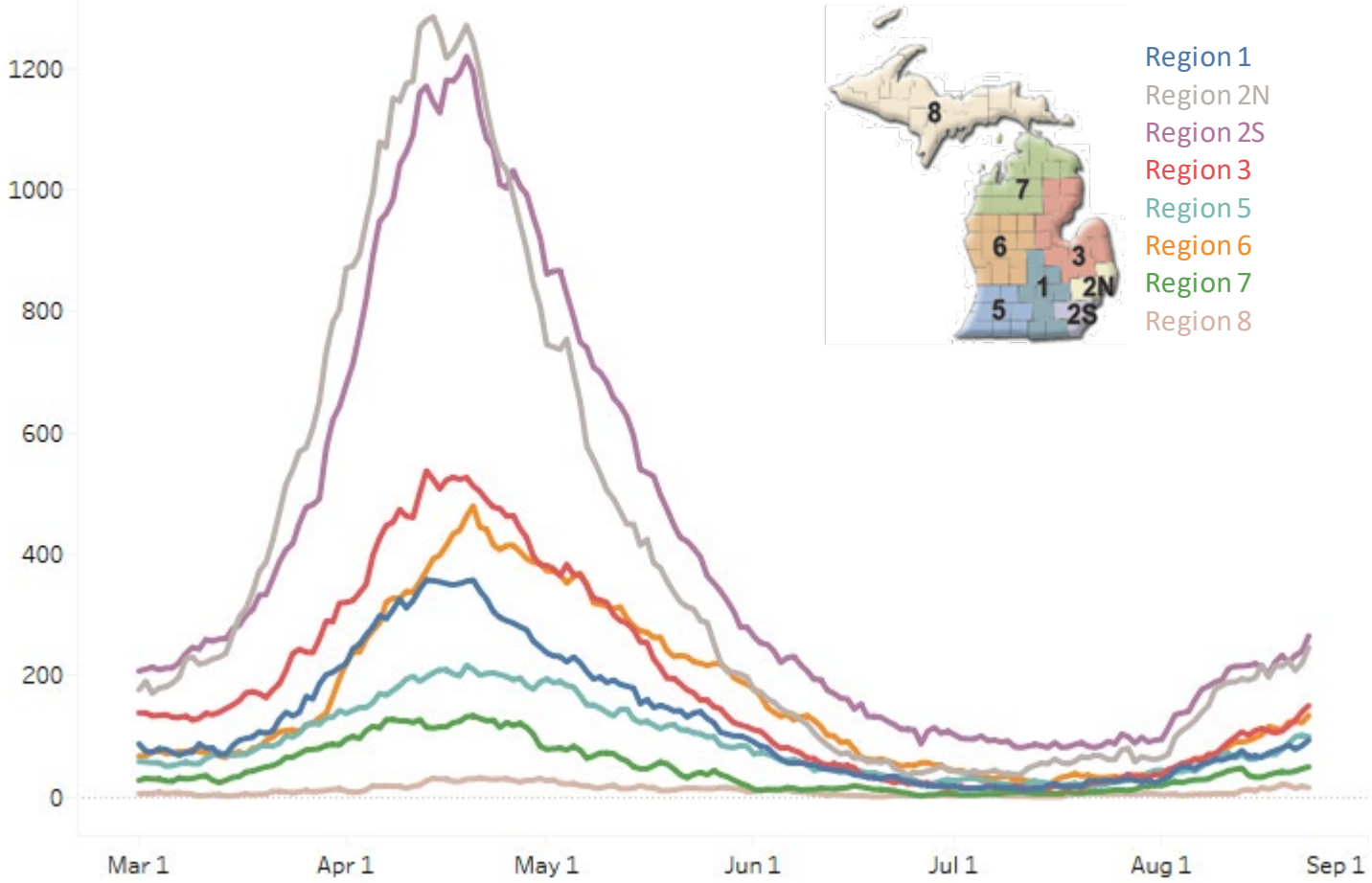
The COVID+ census in hospitals has increased 29% from last week (previous week was up 23%). Hospitalizations are up nearly 5-fold from the nadir in mid-July.

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 3/1/2021 – 8/23/2021
Confirmed Positive by Region



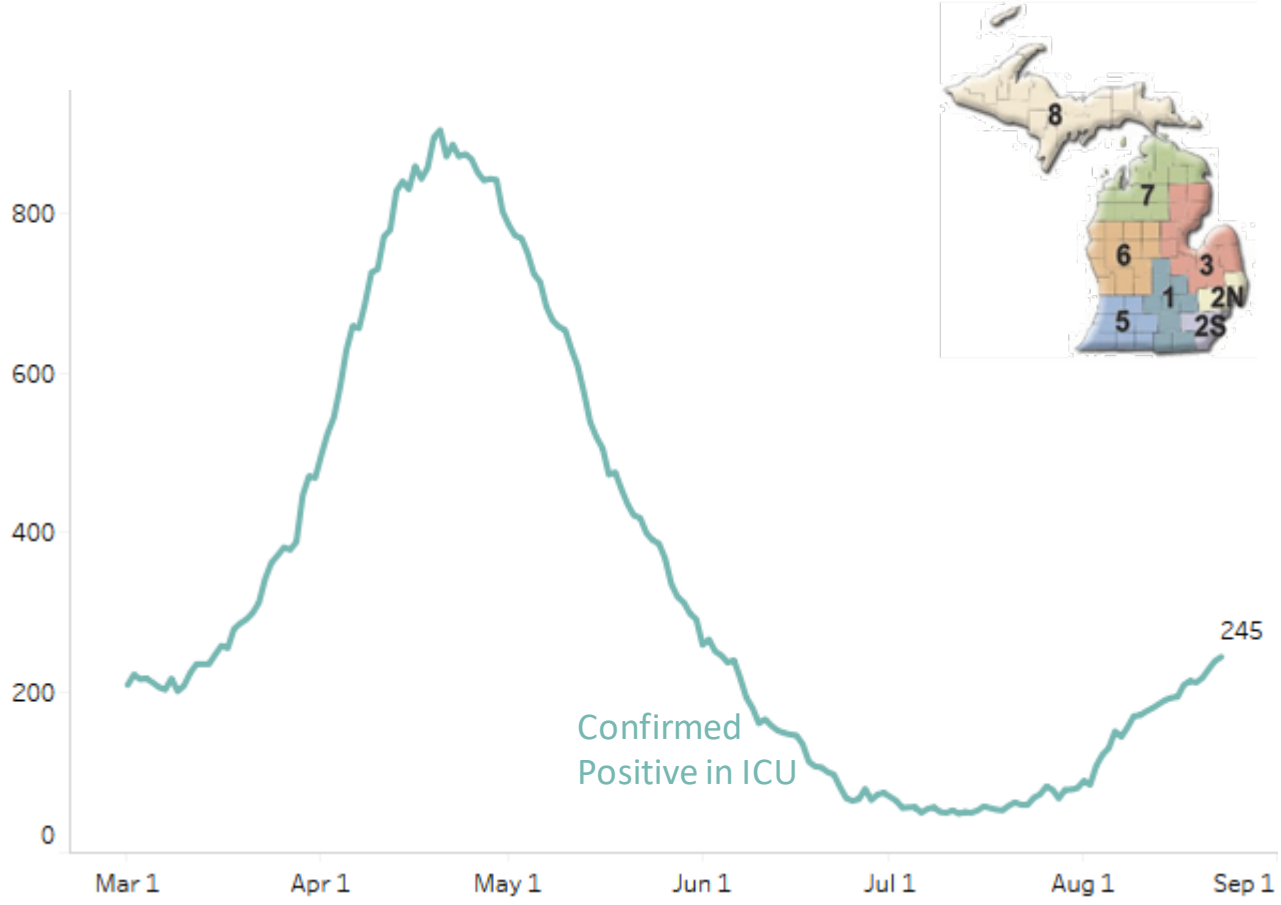
All regions except Region 8 show increasing hospitalization trends this week. The fastest growth was in Regions 5 and 7 this week.

Regions 2N, 2S, 3 and 5 are all above 100/M population hospitalized.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	93 (43%)	86/M
Region 2N	246 (13%)	111/M
Region 2S	265 (24%)	119/M
Region 3	150 (34%)	132/M
Region 5	99 (50%)	104/M
Region 6	134 (31%)	91/M
Region 7	49 (53%)	98/M
Region 8	15 (0%)	48/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 3/1/2021 – 8/23/2021
Confirmed Positive in ICUs



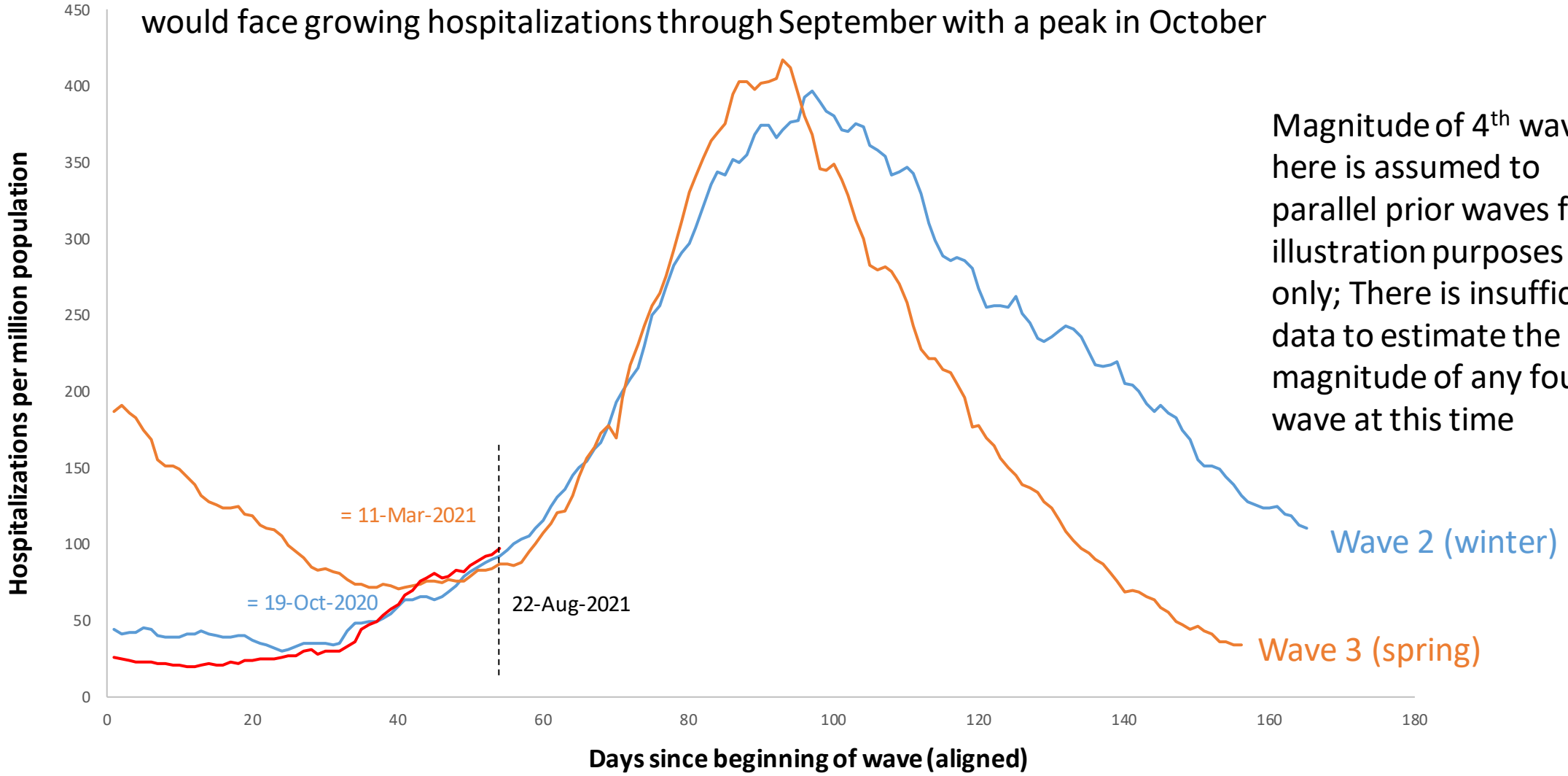
Overall, the census of COVID+ patients in ICUs has increased by 26% from last week, to 245 patients.

All regions except Region 6 have increasing ICU hospitalizations from last week. All regions remain at or below 85% overall ICU occupancy.

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	21 (11%)	85%	11%
Region 2N	58 (23%)	74%	10%
Region 2S	64 (16%)	79%	9%
Region 3	39 (39%)	83%	12%
Region 5	17 (42%)	78%	9%
Region 6	25 (0%)	75%	10%
Region 7	16 (167%)	64%	9%
Region 8	5 (67%)	74%	9%

What if Scenarios: Hospitalizations if we follow Wave 2 or 3

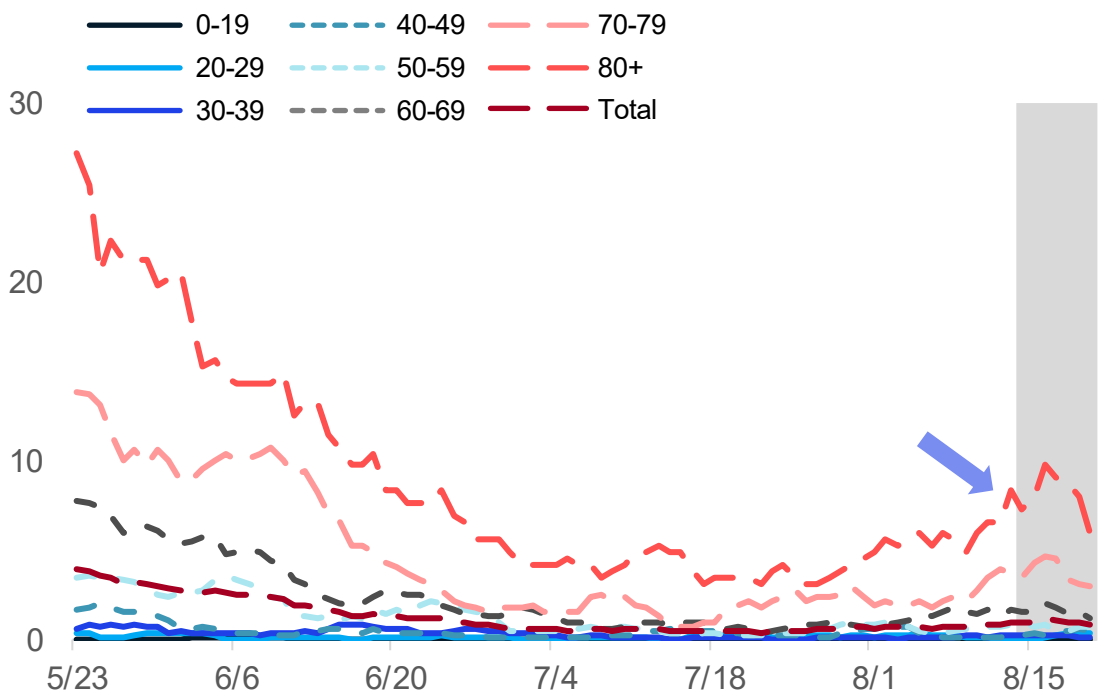
If this wave continues to grow and follows growth patterns of prior Michigan waves we would face growing hospitalizations through September with a peak in October



Magnitude of 4th wave here is assumed to parallel prior waves for illustration purposes only; There is insufficient data to estimate the magnitude of any fourth wave at this time

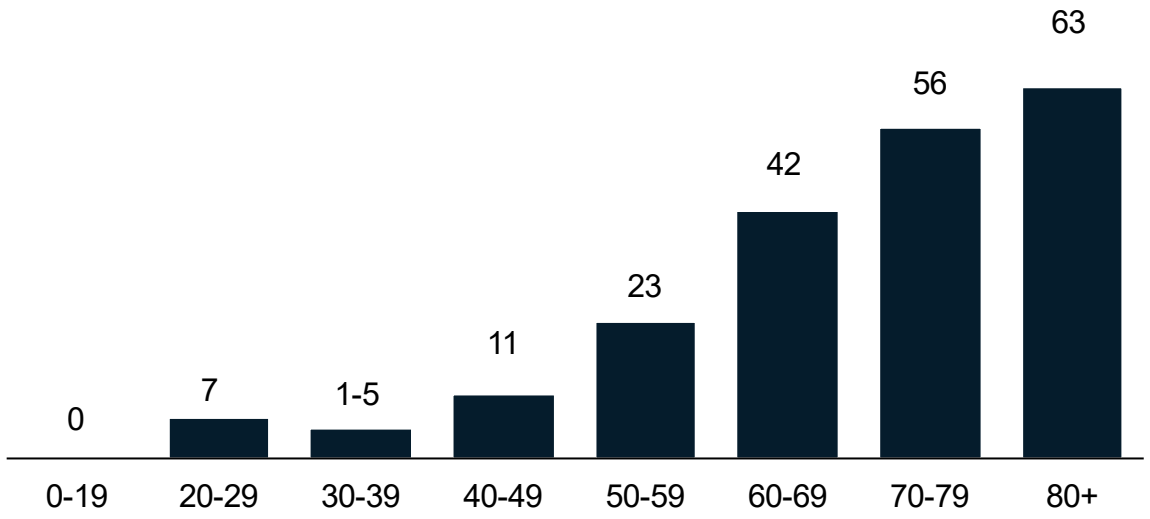
Average and total new deaths, by age group

Daily confirmed and probable deaths per million by age group (7 day rolling average)



Total confirmed and probable deaths by age group (past 30 days, ending 8/16/2021)

- 22% of deaths below age sixty

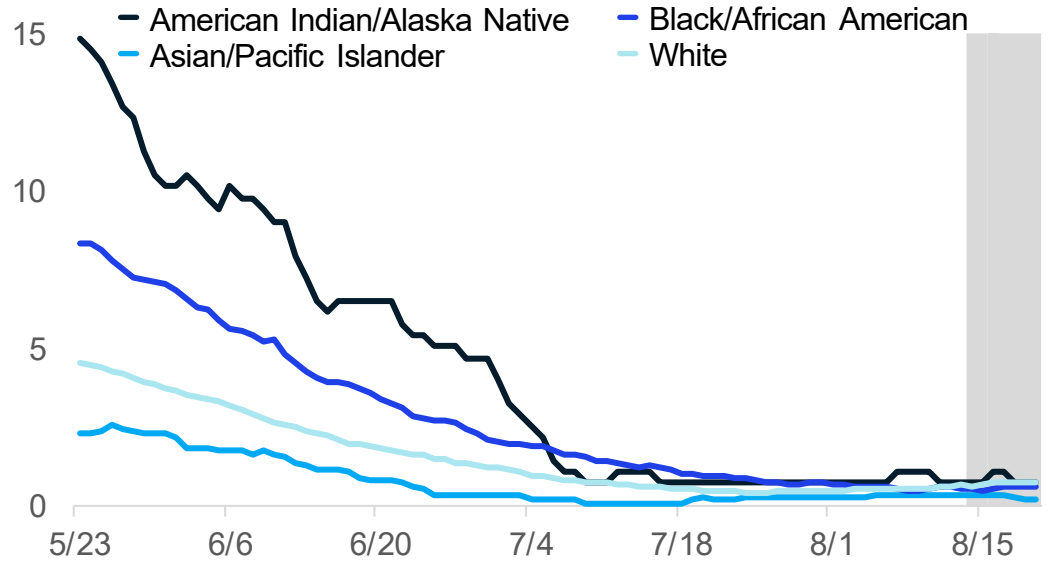


- Overall trends for daily average deaths are increasing since last week
- Through 8/16, the 7-day avg. death rate is more than 2.0 daily deaths per million people for those over the age of 60

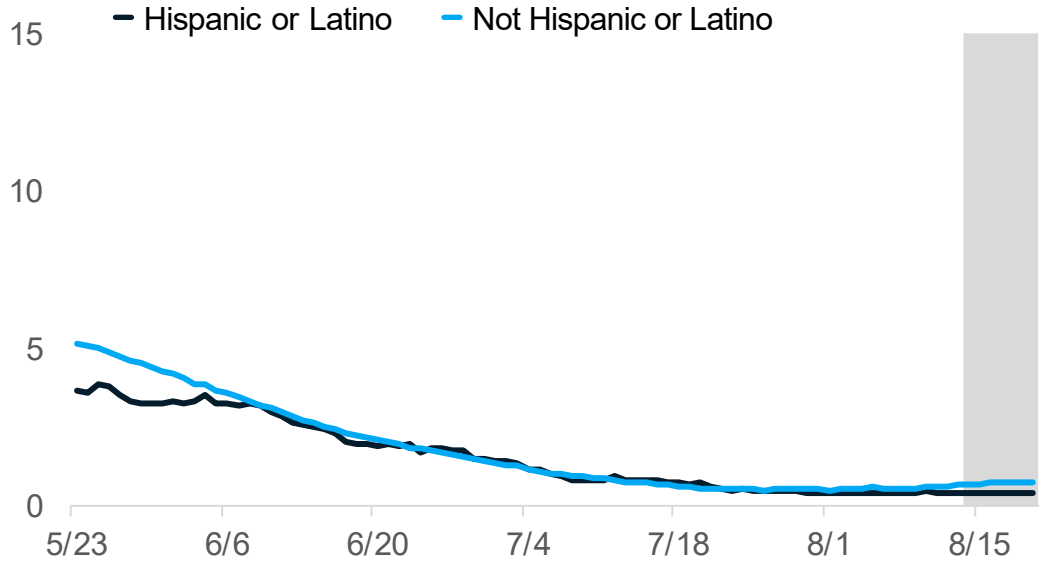
Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System

30-day rolling average daily deaths per million people by race and ethnicity

Average daily deaths per million people by race



Average daily deaths per million people by ethnicity



- Additional reviews of vital records death data were performed the weeks of 7/6 and 8/9 to search for race and ethnicity
- This review has resulted in an adjustment of deaths for American Indian and Alaskan Natives from previous weeks
- **Currently, American Indian/Alaskan Natives have the highest death rate**

Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System

COVID-19 Vaccination

Administration (doses administered)

- 5,289 first doses administered each day (7 day rolling average*)
- Most administered frequently by pharmacies, local health departments, and hospitals

Coverage (people vaccinated)

- 65.9% (+0.5) of aged 18+ have had first dose of vaccine; 86.8% (+0.3) of aged 65+ have had first dose
- 4,992,872 people in Michigan have completed vaccination series (4,955,984 and 4,916,256 in last 2 weeks)
- Initiation highest among Asian, Native Hawaiian or Pacific Islander and American Indian/Alaskan Native individuals (MI COVID Vaccine Dashboard 8/19/21)
- 9,010 Additional Doses for Immunocompromised Individuals administered since 8/13
- Less than 1% of Vaccinated Individuals Later Tested Positive for COVID-19 (Number of cases who are fully vaccinated (n= 14,583)

*https://covid.cdc.gov/covid-data-tracker/#vaccination-trends_vacctrends-onedose-daily

Doses administered in Michigan remains steady as national administration is slightly increasing (data through 8/23/2021)

12,609,020 doses delivered to providers and 10,074,092 doses administered (CDC tracker)

- US showing increase in first doses recently
- MI increase not as strong

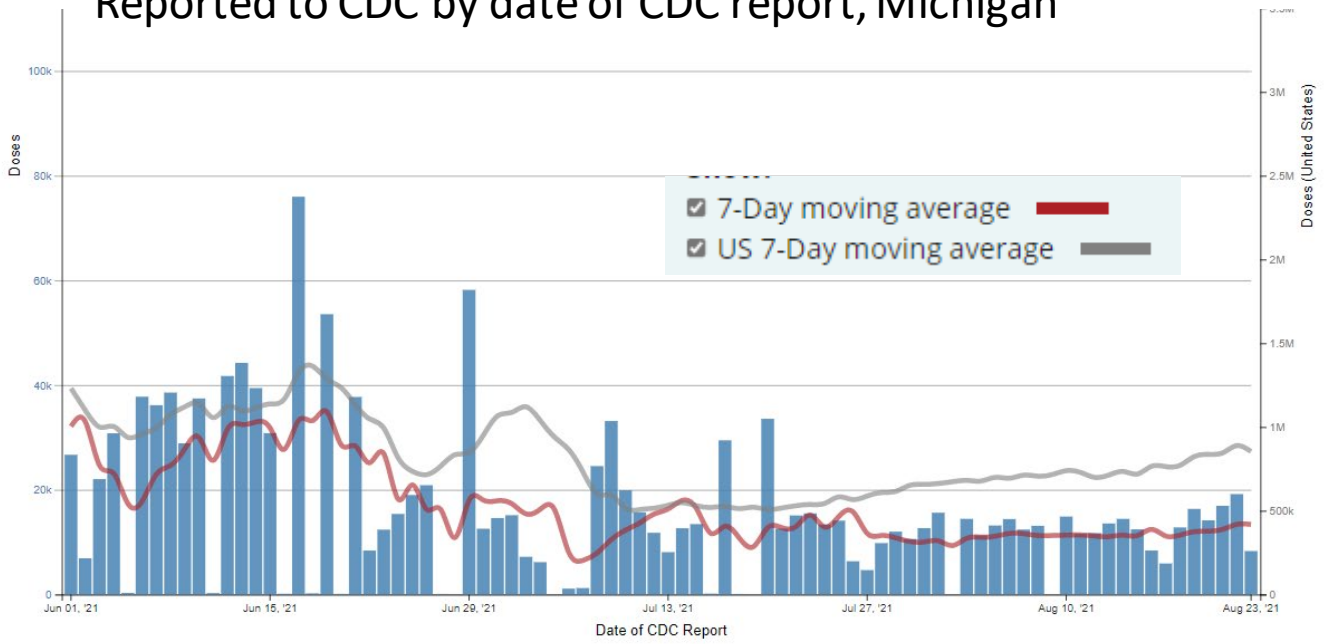
August 12-19 (inclusive)

- 42,311 first doses administered
- 5,289 first doses/day on average (MCIR data)

Doses were most frequently administered by

- Pharmacies (28.5K)
- LHD (3.9K) and hospitals (2.7K)
- Family practice (1.9K), FQHCs (1.7K), and Pediatric (767)

Daily Change in Total Number of Administered Doses Reported to CDC by date of CDC report, Michigan



CDC COVID Data Tracker

Over 4.99 Million Michiganders fully vaccinated and 50% of total population fully vaccinated

4.99 million people in the state are fully vaccinated

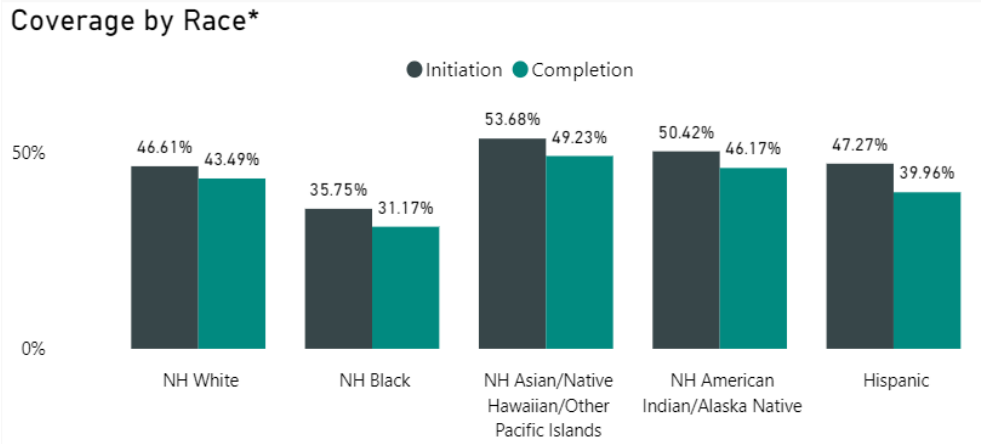
82.4% of people aged 65 and older have completed the series

Race/Ethnicity for those 12 years and older:

- Initiation coverage highest among those of Non-Hispanic (NH) Asian, Native Hawaiian or Pacific Islander Race (53.7%), then NH American Indian (50.4%), NH White (46.6%), NH Black or African American Races (35.8%).
- Initiation is at 46.6% for those of Hispanic ethnicity
- Completion follows the same pattern
- 20.4% data missing or unknown

Vaccination Coverage in Michigan as of 8/23/21

Age Group	% At Least One Dose	% Fully Vaccinated	Number Fully Vaccinated
Total Population	54.7	**50.0**	4,992,872
≥ 12 years	63.6	58.1	4,992,769
≥ 18 years	65.9	60.5	4,744,582
≥ 65 years	86.8	82.4	1,454,829



Third Doses of mRNA Vaccine

Additional Dose: for when initial immune response is likely to be insufficient

- One additional dose recommended for moderately or severely immunocompromised individuals after an initial 2-dose primary series of an mRNA COVID-19 vaccine has been received.
  - Pfizer for persons aged ≥12 years
  - Moderna for persons aged ≥18 years
  - At this time, not recommending additional doses of vaccine for people who were initially vaccinated with the one-dose Janssen vaccine.
- Clinicians use best clinical judgement in determining if patient meets eligibility criteria. No special attestation required by patient or medical provider.
- 9,010 doses since Aug 13th

Booster Dose: for when initial sufficient immune response is likely to have waned

- ACIP considering manufacturers data (July) and vaccine effectiveness by variant (Sept/Oct)
  - HEROES-RECOVER cohort: 5000 essential workers, assess neutralizing antibodies 6 months post-vaccination
  - Vision VE Network: 8 integrated care centers; assesses waning efficacy
  - IVY VE Network: hospital-based investigators (MI too); assess duration of protection
- MDHHS would like every eligible health care provider to enroll as a COVID-19 vaccine provider and keep vaccine available in their clinics to vaccinate their patients
  - 3,968 providers enrolled so far

Comirnaty (koe-mir'-na-tee) approved

FDA approves first COVID-19 Vaccine

- 8/23/21 FDA approved the first COVID-19 vaccine.
- Pfizer-BioNTech COVID-19 Vaccine will now be marketed as Comirnaty (koe-mir'-na-tee), for the prevention of COVID-19 disease in individuals 16 years of age and older.
- Vaccine continues to be available under EUA, including for individuals 12 through 15 years of age and for the administration of a third dose in certain immunocompromised individuals.

Pfizer Extended Expiration Date

Extended from six to nine months, as long as authorized storage conditions between -90°C to -60°C (-130°F to -76°F) have been maintained.

Printed Expiry Date	Updated Expiry Date
August 2021	November 2021
September 2021	December 2021
October 2021	January 2022
November 2021	February 2022
December 2021	March 2022
January 2022	April 2022
February 2022	May 2022

Anticipated: Nursing Home* Staff will be required to receive COVID-19 vaccination

- **Goal**: To Protect America's Nursing Home Residents from COVID-19
- **How**: Requiring COVID-19 Vaccinations for Long-Term Care Workers Who Serve Medicare and Medicaid Enrollees
- **Why**:
  - Millions of COVID-19 vaccinations have been administered to nursing home residents and staff
  - COVID-19 vaccines can prevent severe outcomes from COVID-19 and are proven to be effective against the Delta (B.1.617.2) variant
    - Higher levels of staff vaccination are linked to fewer outbreaks among residents
  - Nationally, 62% of nursing home staff are already fully vaccinated against COVID-19 with some states reporting that more than 88% nursing home staff are fully vaccinated
    - 53% of Michigan's nursing home staff are fully vaccinated

* Medicare and Medicaid participating nursing homes
Source: Centers for Medicare and Medicaid Services and The White House Fact Sheet

Potential COVID-19 Vaccination Breakthrough Cases

Michigan part of CDC's nationwide investigation (COVID-19 Breakthrough Case Investigations and Reporting | CDC)

Michigan Data (1/1/21 through 8/17/21):

- **14,583 cases met criteria based on a positive test 14 or more days after being fully vaccinated**
- **Less than 1% of people who were fully vaccinated met this case definition**
  - **Includes 267 deaths (235 in persons ages 65 years or older)**
  - **779 cases were hospitalized**

- Vaccine breakthrough cases are expected. COVID-19 vaccines are effective and are a critical tool to bring the pandemic under control. However, no vaccines are 100% effective at preventing illness in vaccinated people. There will be a small percentage of fully vaccinated people who still get sick, are hospitalized, or die from COVID-19.
- More than 166 million people in the United States have been fully vaccinated as of August 9, 2021. Like with other vaccines, vaccine breakthrough cases will occur, even though the vaccines are working as expected. Asymptomatic infections among vaccinated people will also occur.
- There is some evidence that vaccination may make illness less severe for those who are vaccinated and still get sick.
- Current data suggest that COVID-19 vaccines authorized for use in the United States offer protection against most SARS-CoV-2 variants currently circulating in the United States. However, variants will cause some vaccine breakthrough cases.

Science Round Up

What is delta and what does it mean to Michigan?

- Michigan rates are about one month behind surges in states with early spread of delta variant; growing at similar rates
- COVID-19 outbreaks have led to numerous school closures through out the United States.
- Pediatric rates per total population in this Delta wave have been approaching 8-9 per million total population
- Delta wave in Michigan could lead to more pediatric COVID hospitalizations this fall than we experienced last spring

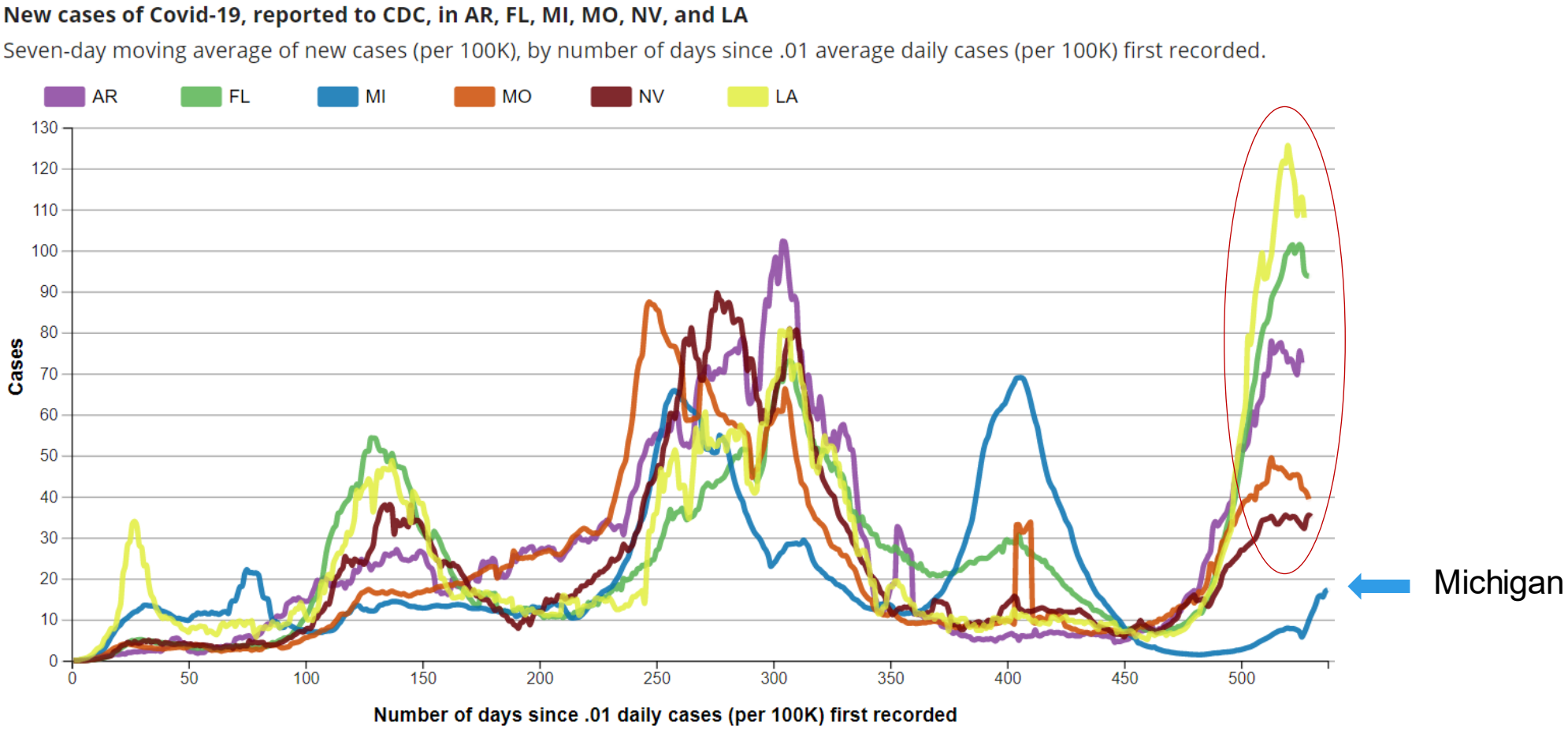
Are vaccinations working?

- Cumulatively, a larger proportion of those who become cases (98%), are hospitalized (95%), and died (95%) from COVID were among people who were not fully vaccinated
- In the last thirty days, 77% of cases, 72% of hospitalized cases, and 85% of deaths were among people who were not fully vaccinated
- Rates of cases are increasing in both groups, but people who are not fully vaccinated have case rates **7** times that of those who are fully vaccinated; and deaths rates for those not fully vaccinated are **30** times the death rate for those fully vaccinated
- Vaccine protection against hospitalization remains strong across different studies and settings

What does Delta Variant mean for Michigan

DRAFT

Cumulative COVID-19 Case Rates: States with High Delta Comparison

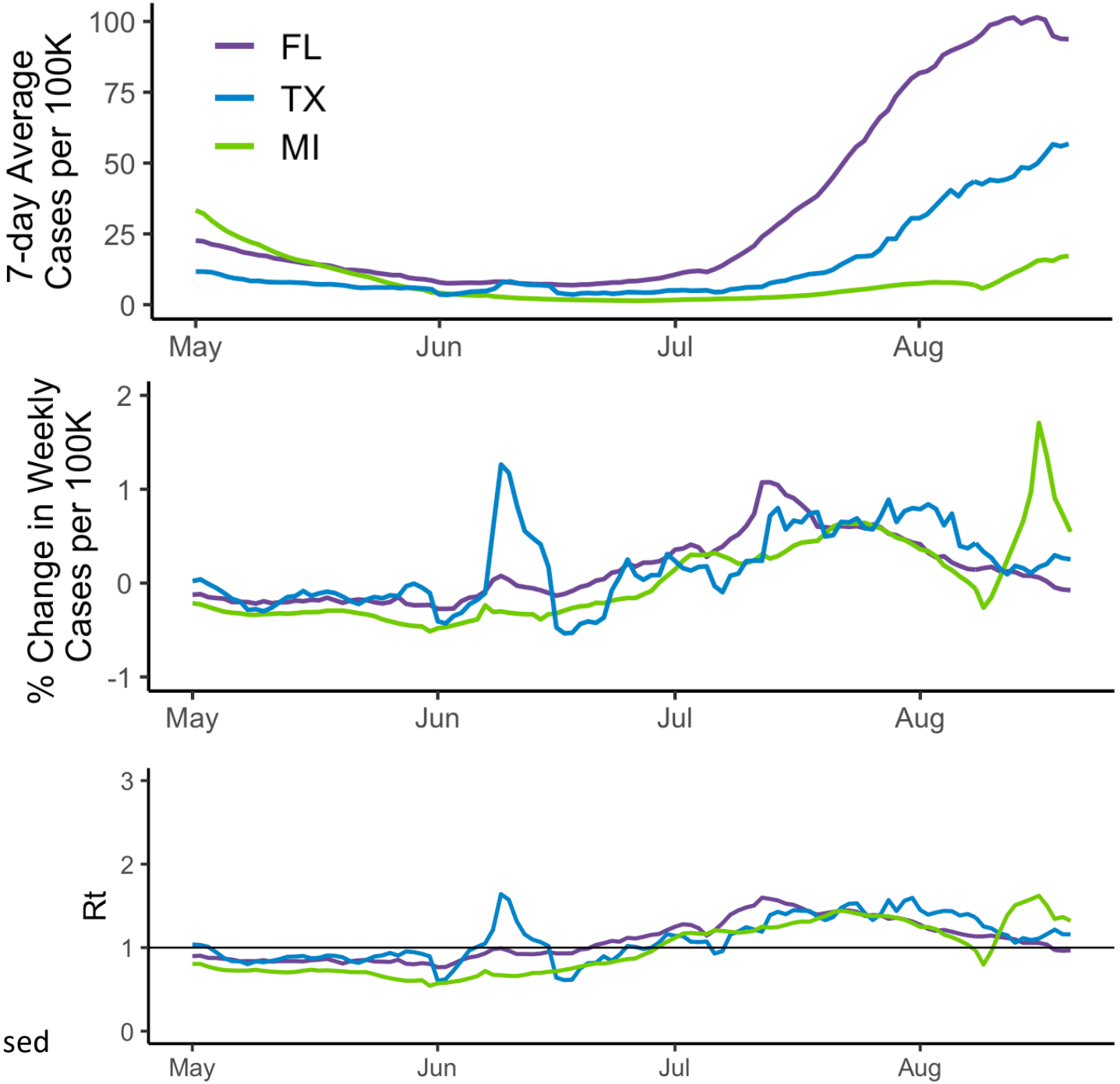


- Average daily incidence per 100,000 cases in Michigan is currently lower than other states experiencing a surge in delta cases

Source: CDC COVID Data Tracker – State Trend Comparison

Michigan cases growing at similar rates to states with Delta surges

- Michigan case rates growing but lower than many states in the south
- However, the week-over-week % change and Rt are similar to other states which have seen large surges
- MI started with lower case rates, so exponential growth takes longer to reach high levels, however potential for Michigan to see a similar surge if growth continues



Sources: CDC data tracker, Rt estimated from case data assuming a 5.68 day mean serial interval (SD = 4.77) based on Reed et al. 2021

PUBLIC HEALTH

Examples of US School District Closures due to COVID-19 outbreaks

THE TEXAS TRIBUNE — *Texas* - Iraan-Sheffield Ind S.D. closed after 6 days. No masking; low community vaccination rates.

LINCOLN JOURNAL STAR — *Nebraska*- Auburn Public Schools closed after 6 days.

Florida Phoenix — *Florida*- School closures in 5 counties. 20,000 students and staff in quarantine and isolation. 17 employees, including seven teachers and an assistant principal have died since Aug 1.

SunHerald — *Mississippi*- 10 schools closed across 5 counties.

2NEWS OKLAHOMA — *Oklahoma* – 3 schools districts. Some schools with over 25% of student body in quarantine.

LEX18 LEXINGTON — *Kentucky* – 2 school districts within 6 days of school opening.

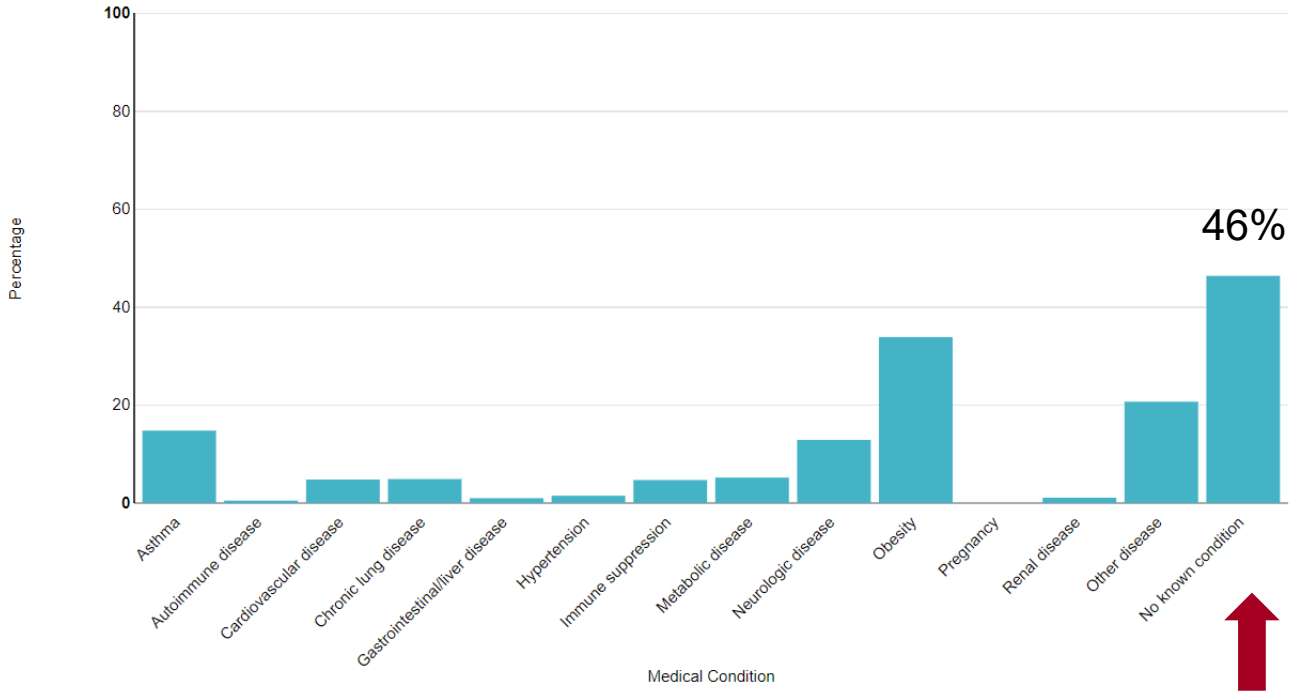
Tennessean. — *Tennessee* – School with 1/3 of staff and students out due to illness. Second school closed "due to an inability to staff the building and classrooms."

SARS-CoV-2 can Negatively Impact Children Directly and Indirectly

- Children can experience severe health outcomes from COVID-19 including MIS-C and Hospitalization
  - **Hospitalizations among children nationwide is higher than it's ever been***
  - **Nearly half of children hospitalized have no reported underlying conditions†**

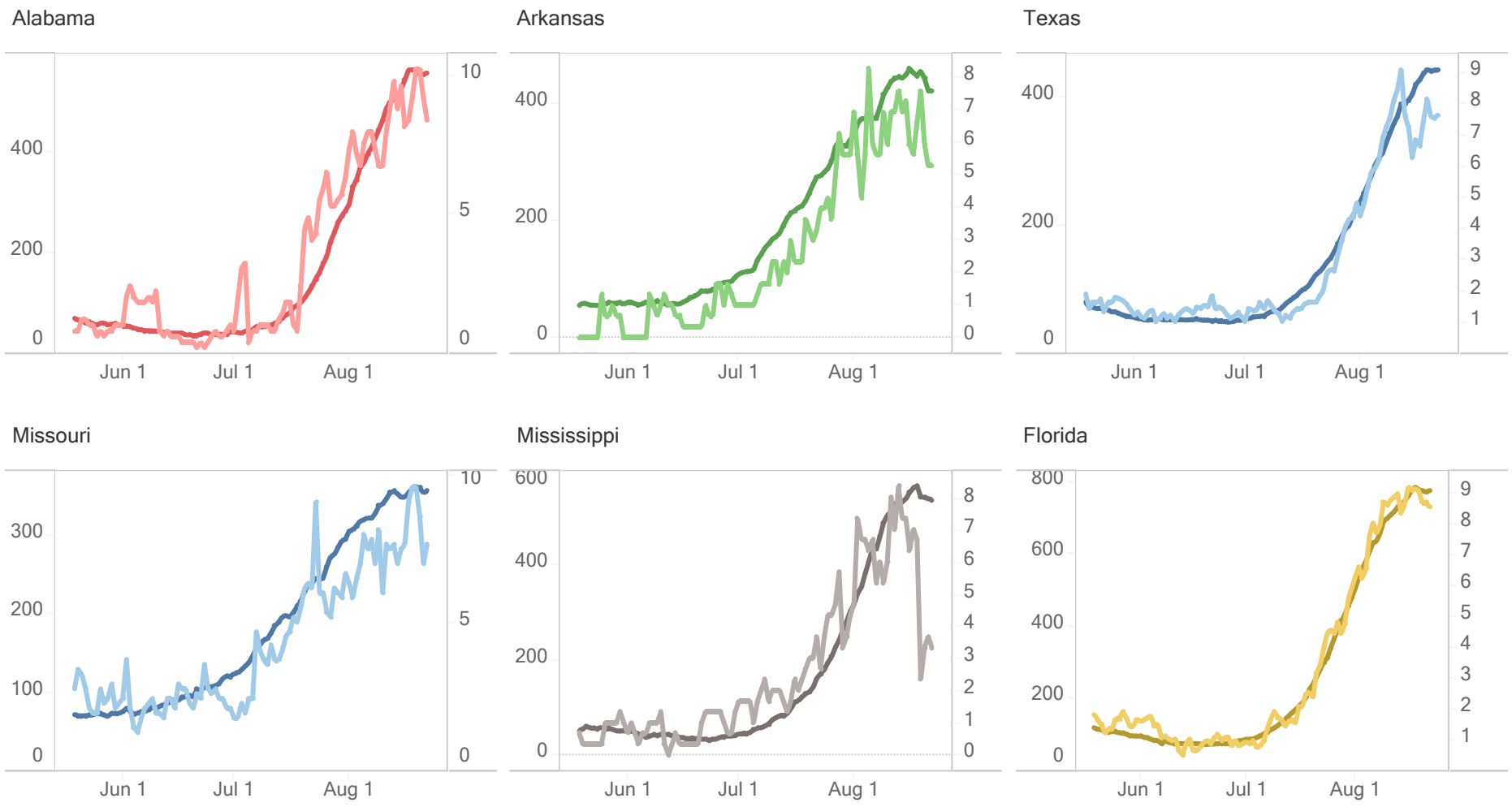
United States Hospital Admissions | 0 -17 years

U.S. Pediatric Hospitalizations | Underlying Medical Conditions



Sources: *CDC COVID Data Tracker > New Hospital Admissions; † COVIDNET

Pediatric Hospitalizations for COVID in other states



- Pediatric hospitalizations follow adult hospitalizations with a slight lag
- Pediatric rates per total population in this Delta wave have been approaching 8-9 per million total population
- Pediatric proportion of population does not vary dramatically in these states vs. Michigan

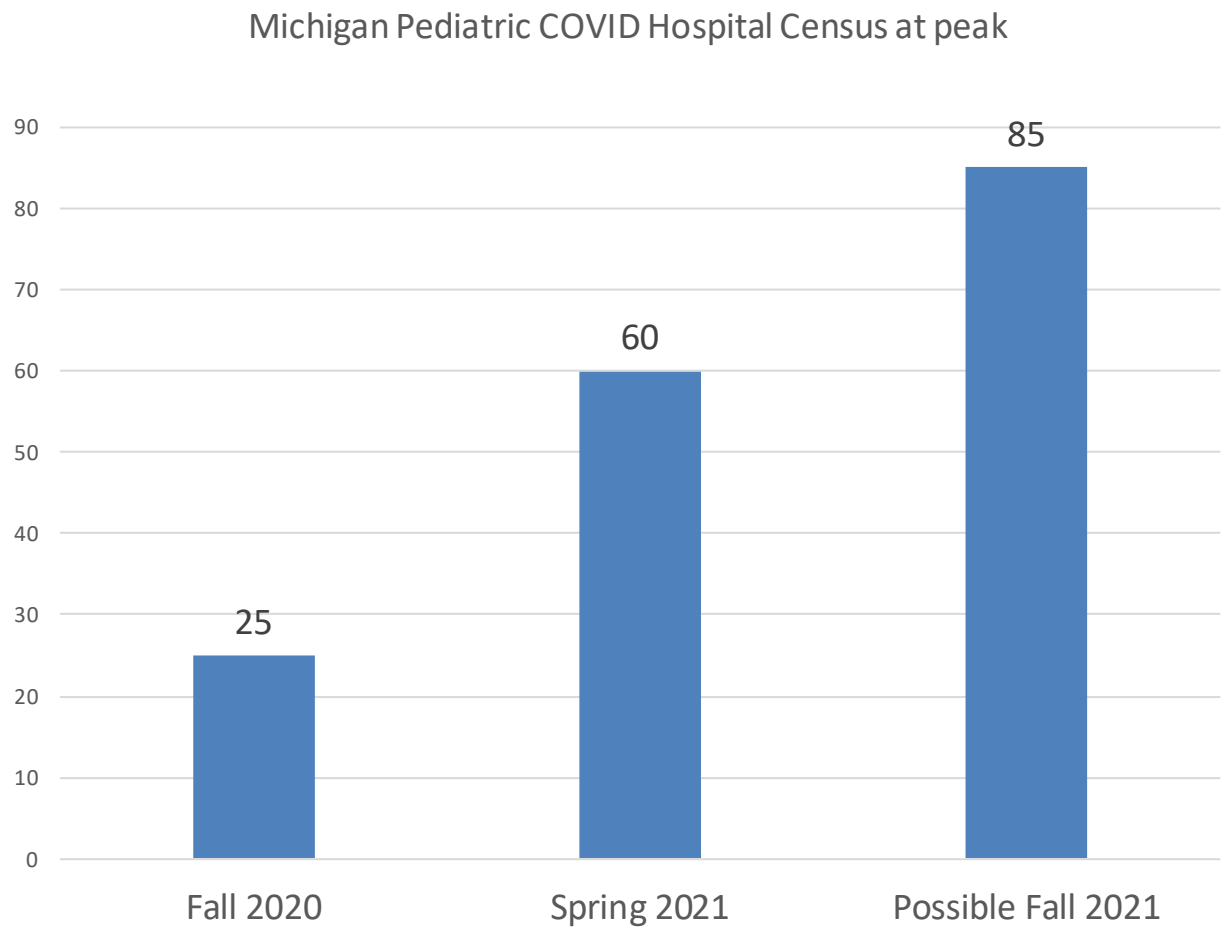
Graphs show Adult hospitalizations per million total population (dark smoother lines, left Y axis) and Pediatric Hospitalizations per million total population (lighter jagged lines, right Y axis)

Michigan Pediatric COVID Hospitalization Implications

Michigan's spring 2021 alpha variant wave saw higher pediatric hospitalizations vs. prior waves in the US

If we extrapolate from what is happening in other states and Michigan has a 4th wave with Delta of similar size to past waves, we could expect even more pediatric COVID hospitalizations this fall

In the spring, ~70% of these hospitalizations were concentrated in 3 pediatric hospitals in Michigan (Detroit, Ann Arbor, Grand Rapids)



Possible fall scenario assumes overall COVID wave similar to past waves and uses pediatric hospitalization rates seen in states having delta surge this summer

Are Vaccinations Working?

DRAFT

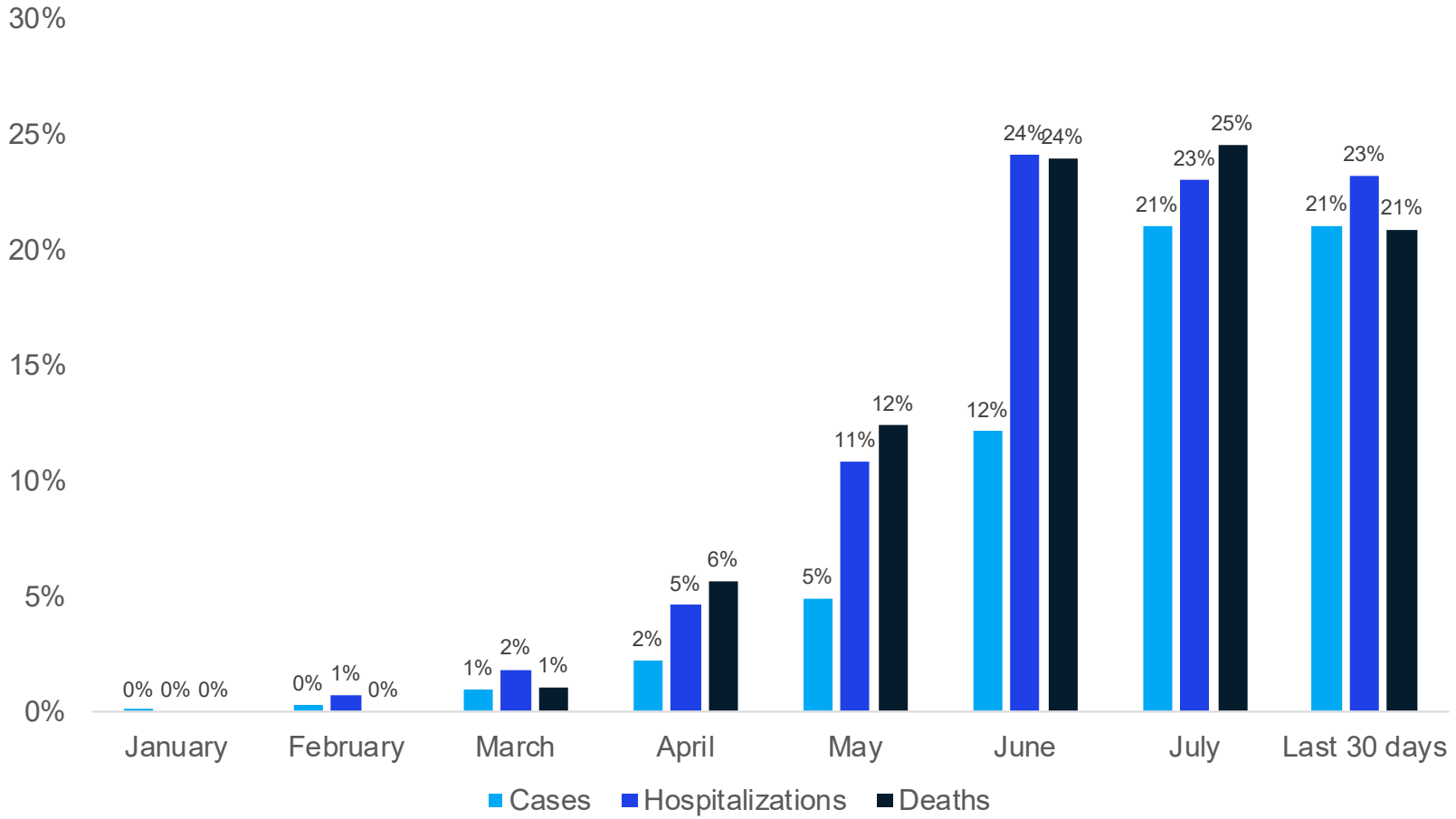
Cumulative COVID-19 Cases by Vaccination Status, Michigan, Jan 15 – Aug 17

Fully Vaccinated People (4,659,504)		
Cases	**Hospitalization**	**Deaths**
Percent of Cases In People Not Fully Vaccinated (406,598 / 421,181) **96.5%**	Percent of Hospitalizations In People Not Fully Vaccinated (11,548 / 12,327) **93.7%**	Percent of Deaths In People Not Fully Vaccinated (4,757 / 5,024) **94.7%**
406,598 Total Cases Not Fully Vaccinated	**11,548** Total Hospitalized Not Fully Vaccinated	**4,757** Total Deaths Not Fully Vaccinated
Total Breakthrough Cases **14,583**	Total Breakthrough Hospitalizations **779**	Total Breakthrough Deaths **267**
0.313% Percent of Fully Vaccinated People who Developed COVID-19 (14,583 / 4,659,504)	**0.017%** Percent of Fully Vaccinated People Who Were Hospitalized for COVID-19 (779 / 4,659,504)	**0.006%** Percent of Fully Vaccinated People Who Died of COVID-19 (267 / 4,659,504)
3.5% Percent of Cases Who Were Fully Vaccinated (14,583 / 421,181)	**6.3%** Percent of Hospitalizations Who Were Fully Vaccinated (779 / 12,327)	**5.3%** Percent of Deaths Who Were Fully Vaccinated (267 / 5,024)
Total Cases: **421,181**	Total Hospitalizations: **12,327**	Total Deaths: **5,024**

Michigan Disease Surveillance System may underestimate the frequency of COVID-19 hospitalizations:
- Case investigation and follow-up is more difficult for individuals who get vaccinated (e.g., they are too ill to speak to investigators, don't answer their phone, or otherwise).
- These hospitalizations include individuals who are hospitalized for issues other than COVID19 (the same as breakthrough COVID-19).
- Individuals who get hospitalization will lag after infection and may occur after case investigation.

Trends in Breakthrough Cases, Hospitalizations, and Deaths

- 50% of the population is fully vaccinated yet only account for ~20% of cases, hospitalizations, and deaths
- As the fully vaccinated population has increased, so have the percent of breakthrough incident; but breakthrough burden remains lower
- In the last 30 days, 6,151 (21%) of 29,269 cases, 198 (23%) of 854 hospitalizations, and 24 (21%) of 115 deaths were among fully vaccinated individuals



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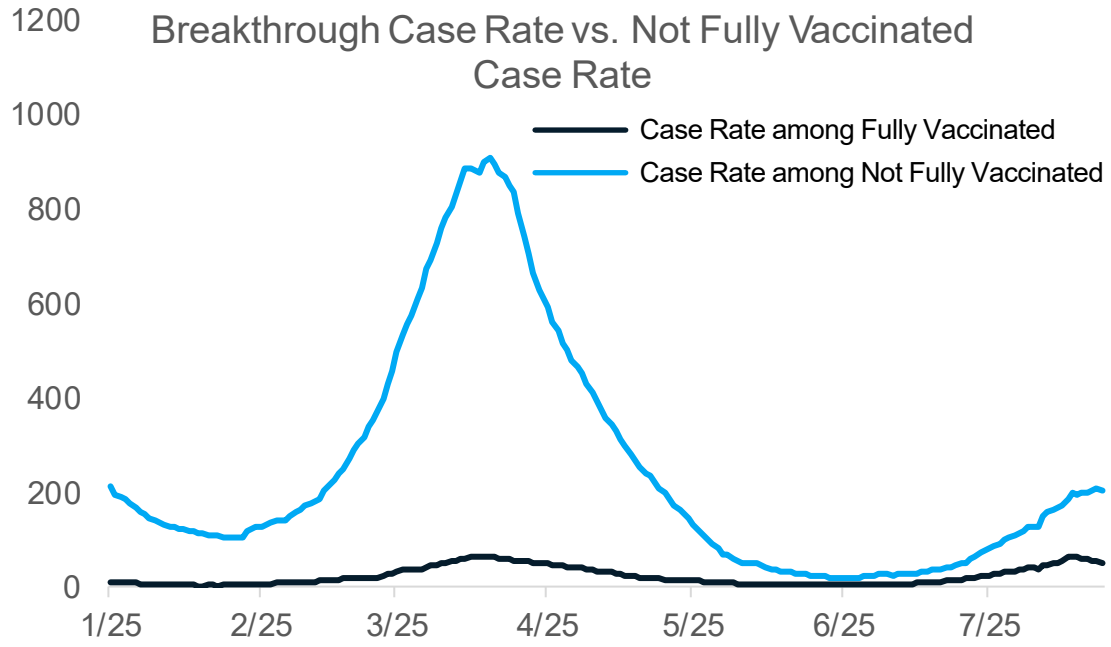
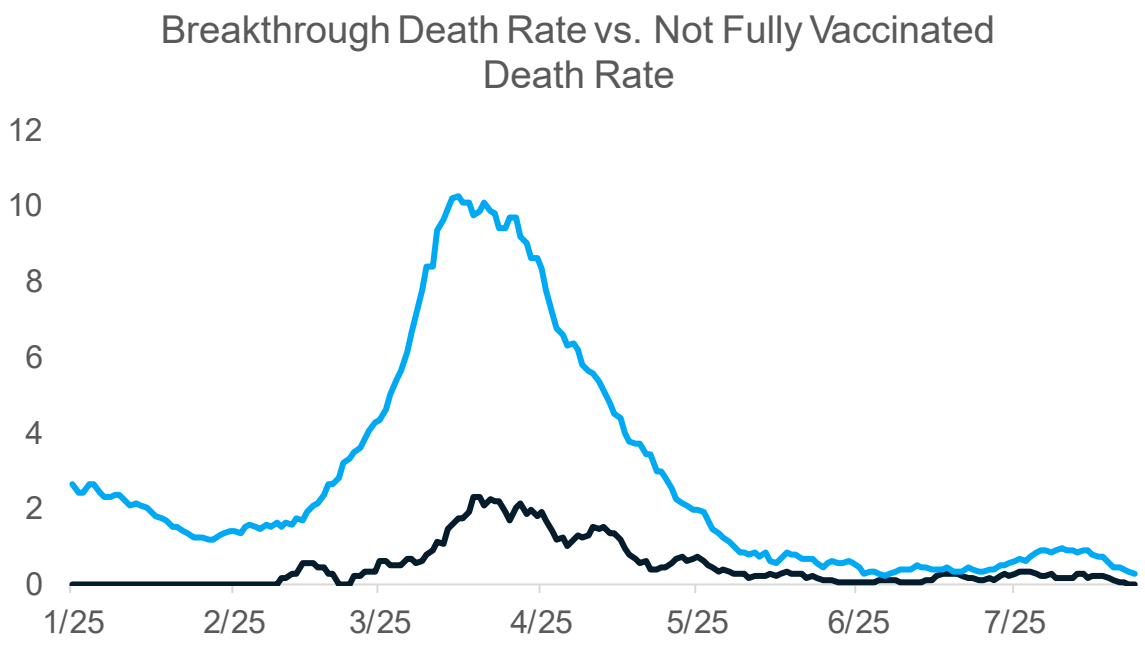
COVID-19 Vaccination Breakthrough Cases and Deaths





- Trends over time show that both case and death rates among the Fully Vaccinated are lower than the Not Fully vaccinated rates in Michigan
- Rates of cases are increasing in both groups, but people who are not fully vaccinated have case rates **7** times that of those who are fully vaccinated; and deaths rates for those not fully vaccinated are **30** times the death rate for those fully vaccinated
- The *proportion* of breakthrough cases and deaths among all cases and deaths has shown some increases as more people become fully vaccinated
  - However, the risk of infection and death remains significantly lower among the fully vaccinated

All three vaccines effective at preventing hospitalization

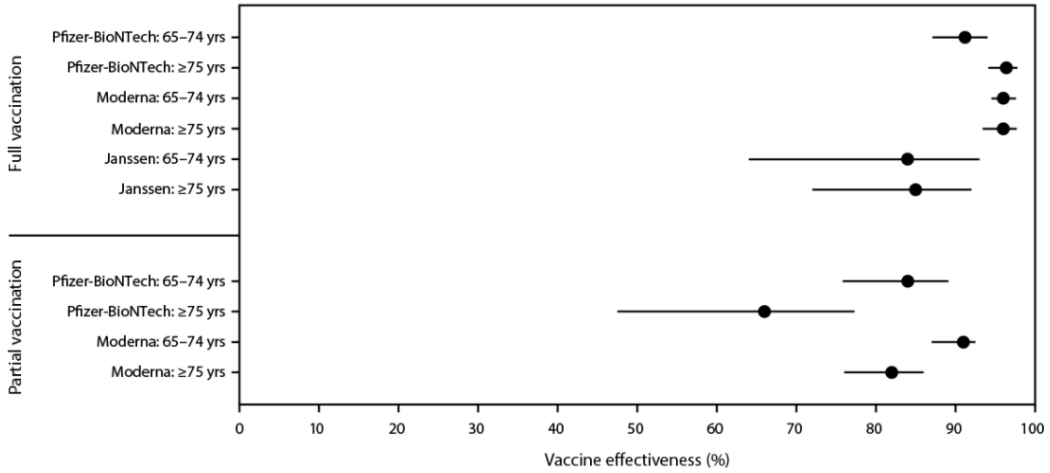
Effectiveness of COVID-19 Vaccines in Preventing Hospitalization Among Adults Aged ≥65 Years — COVID-NET, 13 States, February–April 2021

COVID-NET: data on laboratory-confirmed COVID-19–associated hospitalizations in 99 U.S. counties in 13 states including Michigan.

Among adults aged 65–74 years, effectiveness of full vaccination for preventing hospitalization was 96% for Pfizer-BioNTech, 96% for Moderna, and 84% for Janssen COVID-19 vaccines

Among adults aged ≥75 years, effectiveness of full vaccination for preventing hospitalization was 91% for Pfizer-BioNTech, 96% for Moderna, and 85% for Janssen COVID-19 vaccines.

FIGURE 2. Estimates of vaccine effectiveness in preventing COVID-19–associated hospitalization among patients aged ≥65 years for the COVID-NET catchment area, by vaccine product and age group using the screening method — COVID-NET, 13 states,* February 1–April 30, 2021†



Abbreviations: COVID-NET = Coronavirus Disease 2019–Associated Hospitalization Surveillance Network; Janssen = Janssen (Johnson & Johnson).

* COVID-NET data included in this analysis were from the following states: California, Colorado, Connecticut, Georgia, Maryland, Michigan, Minnesota, New Mexico, New York, Ohio, Oregon, Tennessee, and Utah.

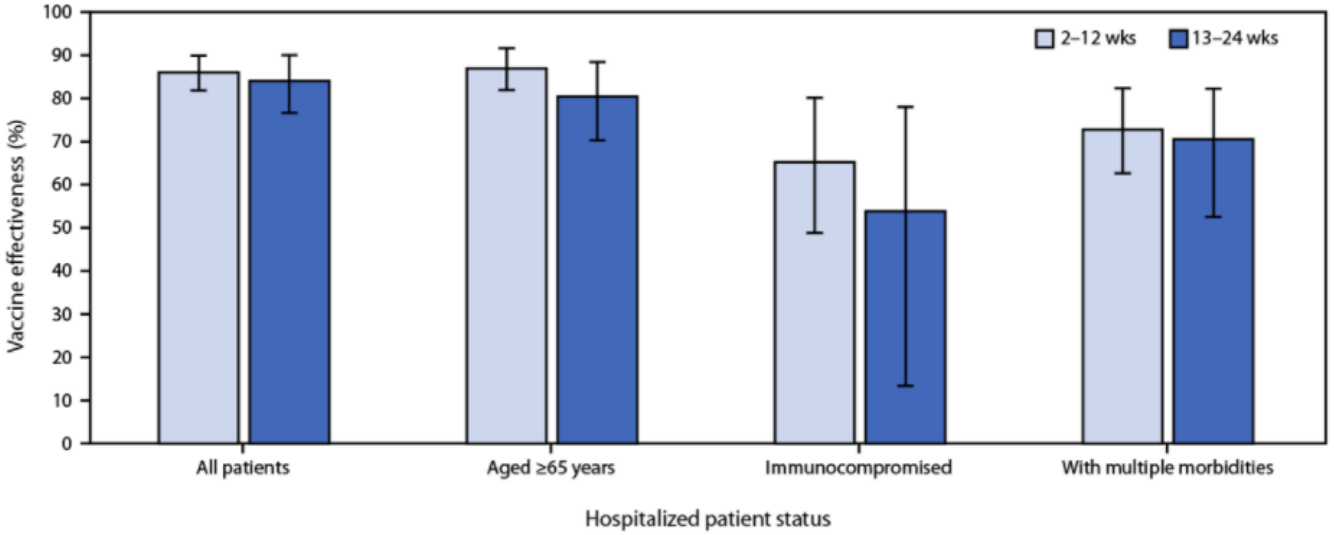
† Confidence intervals indicated by error bars.

Moline HL, Whitaker M, Deng L, et al. Effectiveness of COVID-19 Vaccines in Preventing Hospitalization Among Adults Aged ≥65 Years — COVID-NET, 13 States, February–April 2021. MMWR Morb Mortal Wkly Rep. ePub: 6 August 2021. DOI: http://dx.doi.org/10.15585/mmwr.mm7032e3external icon.

CDC Report: Sustained Vaccine Effectiveness against Hospitalization

- Vaccine Effectiveness **86%** in preventing COVID-19 hospitalization through July 14, 2021.
- Evaluation of 3,089 hospitalized adults in 18 states including Michigan.
- Includes adults of all ages.
- VE in June–July was **84%** (95% CI = 79%–89%).
- VE reduced in immunocompromised individuals **63%** (95% CI = 44%–76%).

FIGURE 2. Sustained vaccine effectiveness* against COVID-19 among hospitalized adults, by patient status[†,§] and interval since vaccination — 21 medical centers in 18 states,[¶] March–July 2021



Tenforde MW, Self WH, Naioti EA, et al. Sustained Effectiveness of Pfizer-BioNTech and Moderna Vaccines Against COVID-19 Associated Hospitalizations Among Adults — United States, March–July 2021. MMWR Morb Mortal Wkly Rep. ePub: 18 August 2021. DOI: http://dx.doi.org/10.15585/mmwr.mm7034e2

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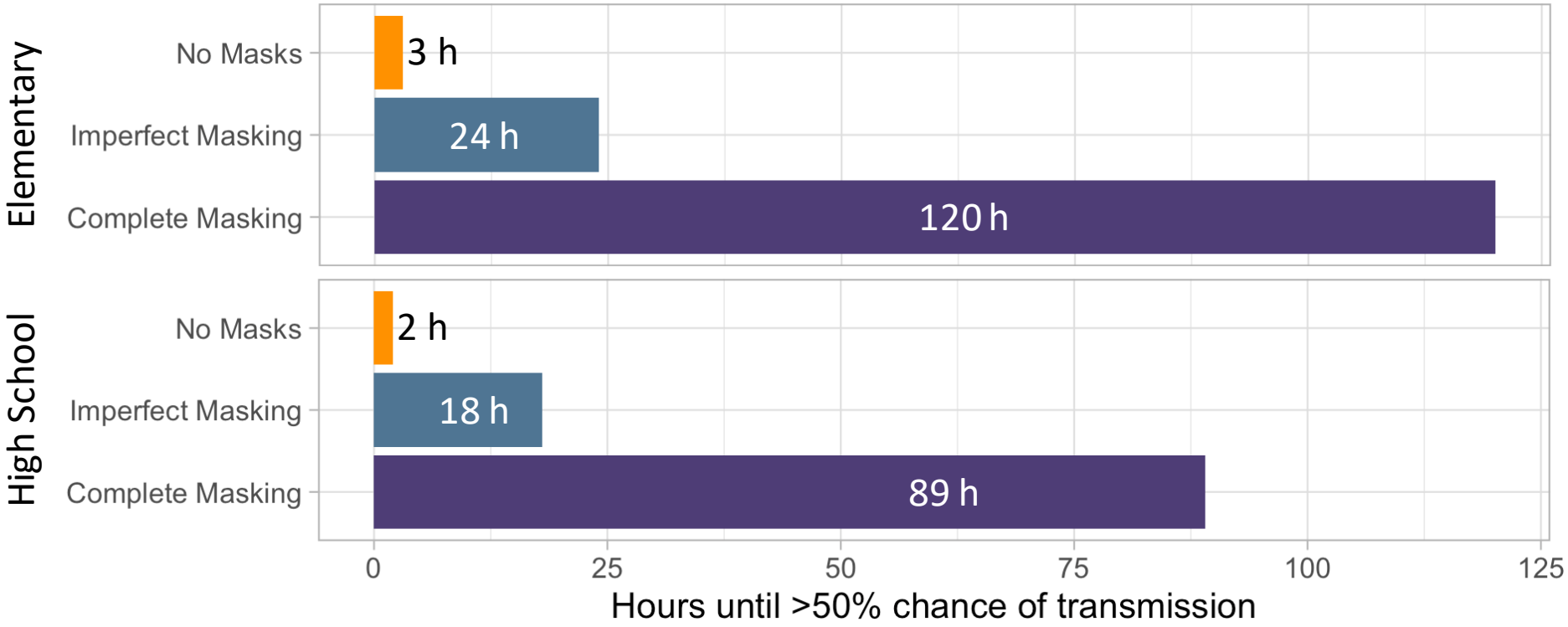
Appendix

Modeling: Masks can substantially reduce transmission in school settings, even with delta variant

If 1 infectious child attends a class of 25 students, how long does it take for there to be a >50% chance of at least one transmission event occurring?



Estimates from the COVID-19 Indoor Safety Guideline, based on Bazant and Bush, A guideline to limit indoor airborne transmission of COVID-19, PNAS 2021. Simulations assume: delta strain, normal talking (not singing/etc.), with child age group for elementary and average between adult and child age groups for high school. Vaccine coverage was assumed to be 0% for elementary and 33% for high school, based on age-specific coverage rates as of 8/6/21. We assumed 95% mask fit/compliance for 'Complete Masking' and 75% for 'Imperfect Masking'.

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