MI COVID RESPONSE DATA AND MODELING UPDATE

October 19, 2021

Executive Summary

Special Population Focus: Children

Cases are increasing from last week

There were 408 outbreaks and clusters in K-12 schools

Census of COVID+ pediatric patients (<18 years old) in hospitals has increased steadily since August but decreased over the last week

169 Michigan children have been reported with Multisystem Inflammatory Syndrome in Children (MIS-C)

Roll out of vaccine for 5–11-year-olds could occur in early November: More than 840K children of that age in Michigan

7% of school districts have rescinded their school mask policies

Michigan remains at <u>High Transmission</u>

Percent positivity (11.3%) increased for three weeks (11.2% last week)

Case rate (315.7 cases/million) is increasing for three and half months (304.4 cases/million prior week)

In the last 7 days, only 3 states/territories/jurisdictions reported more cases than Michigan (this week rank 55th lowest; 55th last week), and Michigan case rate is 51st lowest (46th last week)

100% 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 (10.2%) is increasing for 13 weeks (up from 9.3% last week)

Michigan has 40th lowest inpatient bed utilization (30th last week) and 41st lowest adult ICU bed utilization (28th last week)

Death rate (3.4 deaths/million) is increasing for two weeks (3.0 last week). There were 234 COVID deaths between Oct 5-Oct 11

Michigan has the 46th lowest number of deaths (36th last week), and T19th lowest death rate (T16th last week) in the last 7 days

7-day average **state testing rate** is plateaued around 3958.5 tests/million/day. **Daily diagnostic tests (PCR)** is 40.1K per day, and the weekly average for PCR and antigen tests conducted in Michigan is 52.2K.

Nearly 11.1 million **COVID-19 vaccine** doses administered, 53.0% of the population is fully vaccinated (5.3 million people)

COVID-19 and Pediatric Populations

Overview of metrics for individuals < 12 and <18

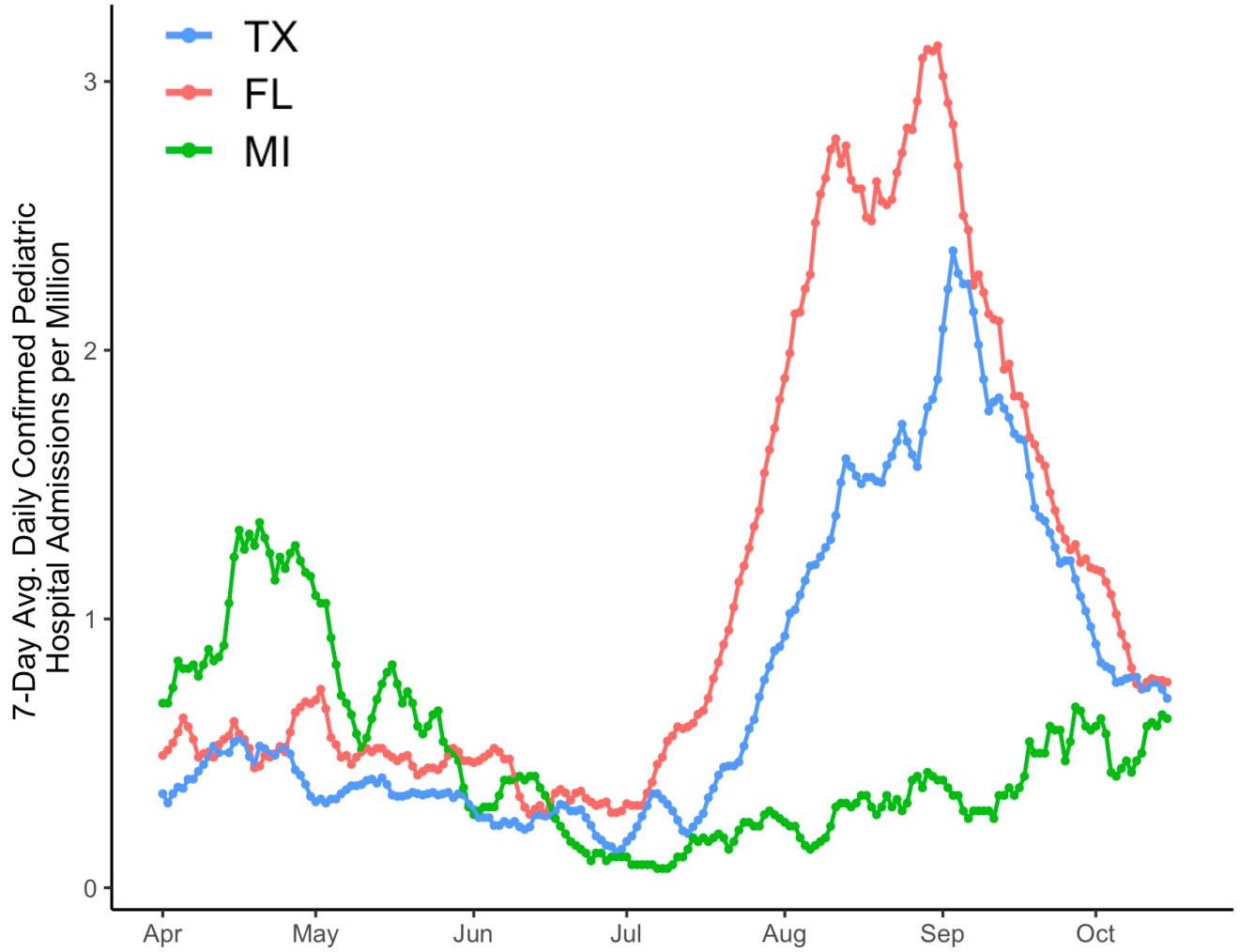
Region	Population (<12 yrs)	Population (<18 yrs)	Cumulative Case Count (<12 yrs)	7-day Average Daily Case Count (<12 yrs)	7-day Average Daily Case Rate per Million (<12 yrs)	7-day Average Daily Pediatric Hospitalization Count (<18 yrs)*	7-day Average Daily Pediatric Hospitalization Rate per Million (<18 yrs) *	7-day Average Daily Death Count (<12 yrs)	30-day Average Daily Death Count (<12 yrs)
Detroit	735529	1134247	40060	195.9	266.3	15.7	13.8	0	0
Grand Rapids	230120	350652	14664	91.4	397.2	6.0	17.1	0	0
Kalamazoo	140422	214801	7657	40.3	287.0	1.3	6.1	0	0
Saginaw	78759	122834	4929	38.4	487.6	1.4	11.4	0	0
Lansing	78140	119915	4708	31.0	396.7	1.3	10.8	0	0
Traverse City	53099	83462	2422	15.1	284.4	0.3	3.6	0	0
Jackson	41274	64091	2356	19.6	474.9	0.0	0.0	0	0
Upper Peninsula	34645	53875	2524	21.3	614.8	0.0	0.0	0	0
Michigan	1391988	2143877	79410	453.4	325.7	26.0	12.1	0	0

- Each day more than 450 children under age 12 become infected with COVID-19, 25 more children per day than last week
- Pediatric case rates are increased to 325.7 cases/million (last week: 305.6 cases/million)
- Pediatric (<18) hospital census* is averaging approximately 26 per day (last week: 34 per day)

Note: Data as of 10/18; case data 10/11, hospitalization data 10/18. Hospitalization data is for pediatric patients (<18); * includes only confirmed COVID-19

Other states experienced a sharp increase in pediatric hospital admissions during the recent surge

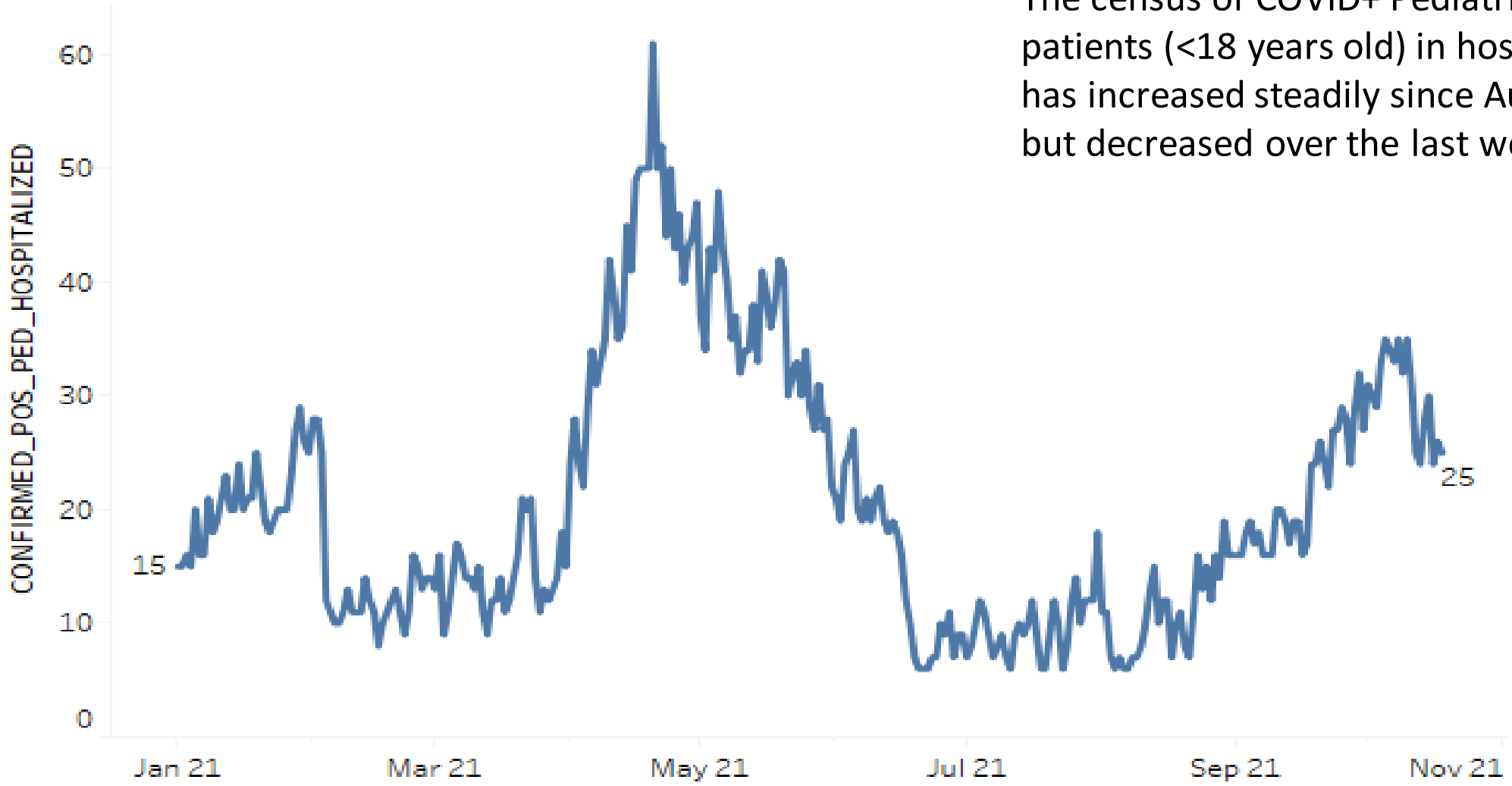
- States across the southern US saw extremely rapid and concerning surges in pediatric hospital admission rates
- Highest pediatric COVID-19 hospitalization rate seen so far in the pandemic for many areas
- Many of these areas are now declining (still higher than current MI levels though)
- Michigan is experiencing a delayed surge—potential for similar increases in Michigan as cases (and subsequently hospital admissions) rise



Source: CDC COVID Data Tracker confirmed pediatric hospital admissions

Statewide Hospitalization Trends: Pediatric COVID+ Census

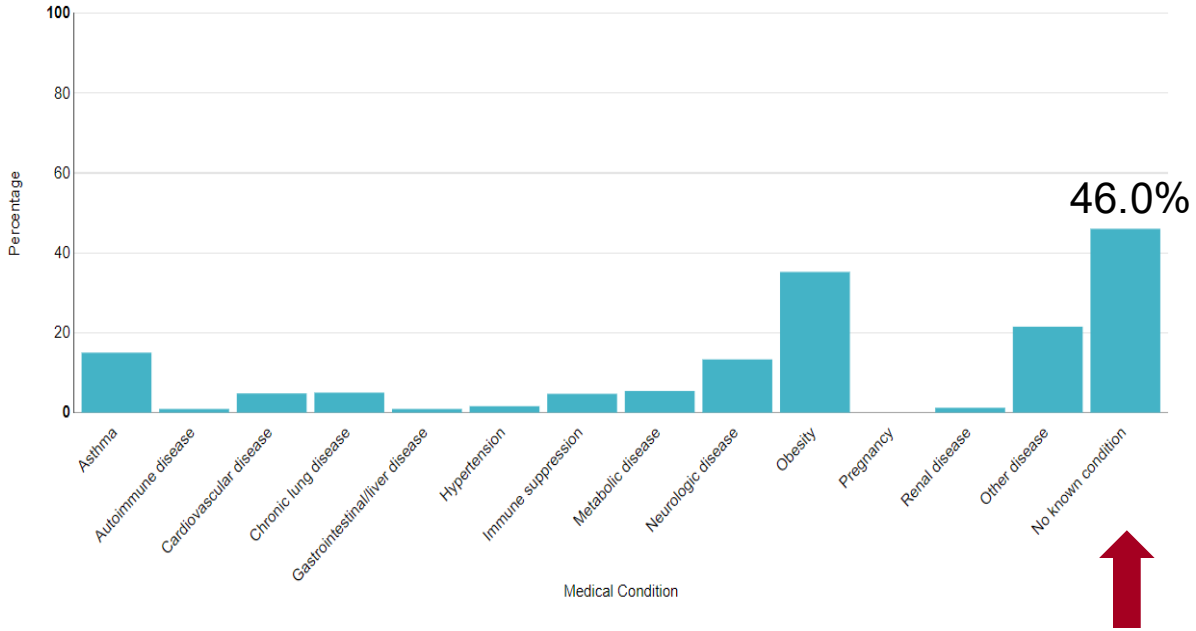
The census of COVID+ Pediatric patients (<18 years old) in hospitals has increased steadily since August but decreased over the last week



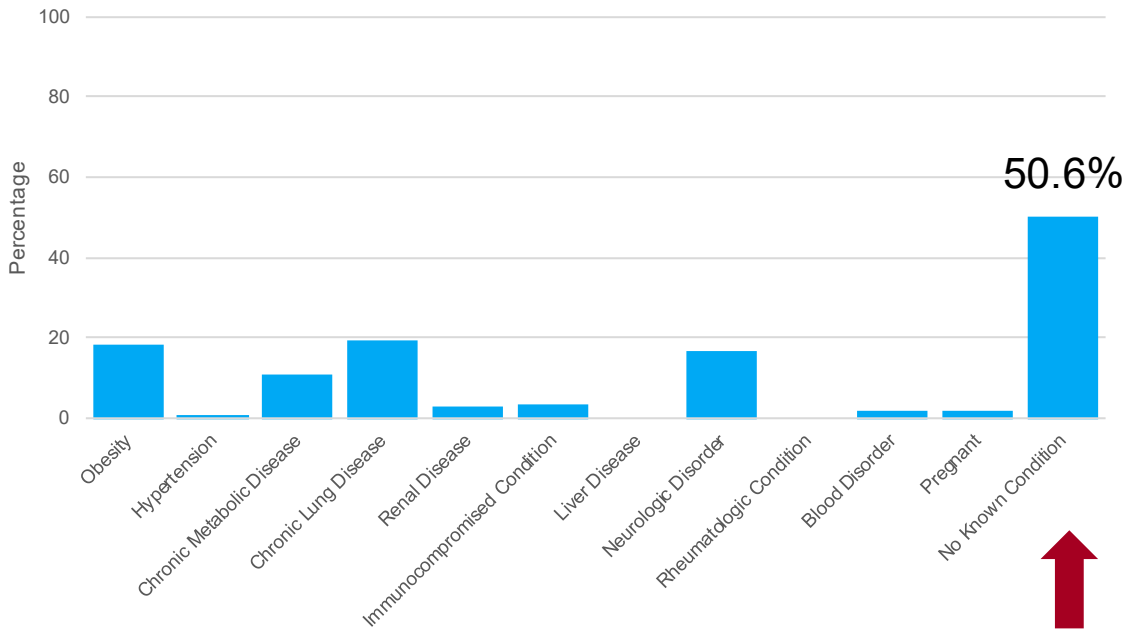
Majority of hospitalized children have no underlying conditions

- Children can experience severe health outcomes from COVID-19 including MIS-C and Hospitalization
  - Nationally, nearly half of children hospitalized have no reported underlying conditions†
  - In Michigan, 50.6% of children hospitalized have no reported underlying conditions

U.S. Pediatric Hospitalizations | Underlying Medical Conditions



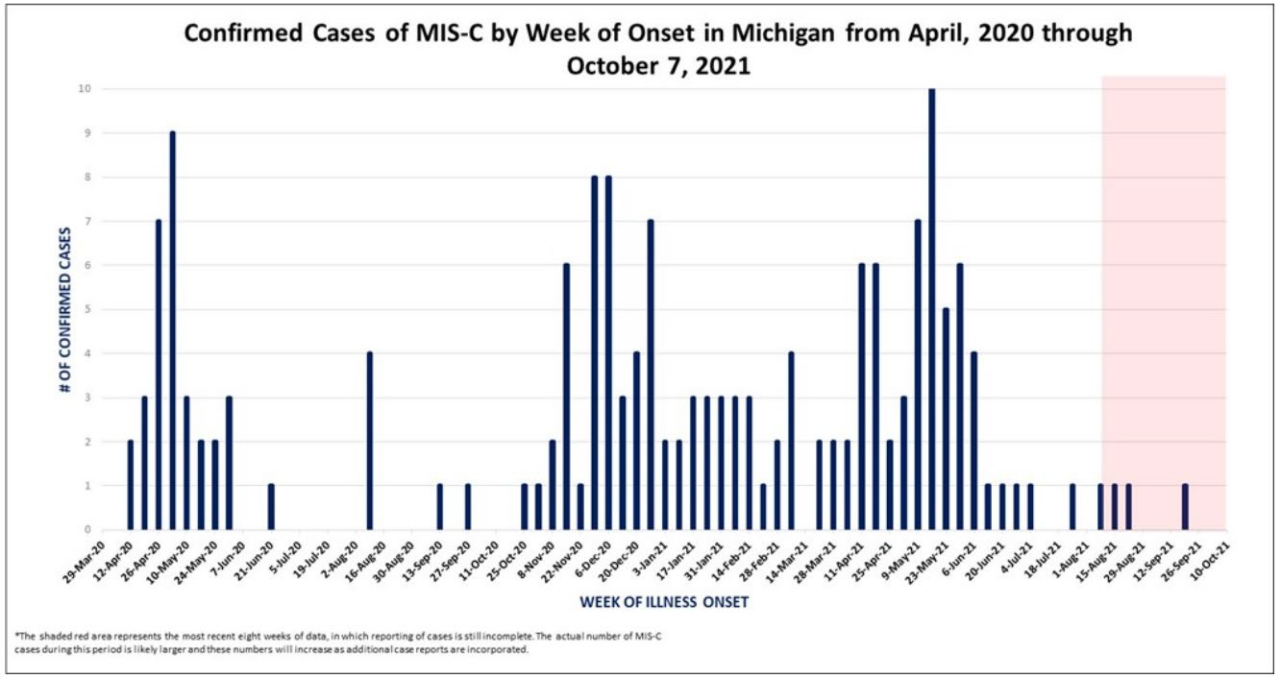
MI Pediatric Hospitalizations | Underlying Medical Conditions

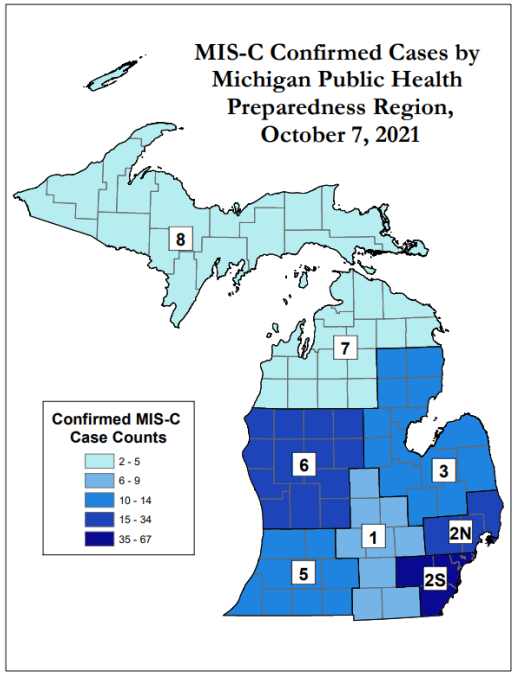


1. COVID-NET hospitalization data are preliminary and subject to change as more data become available. In particular, case counts and rates for recent hospital admissions are subject to delay. As data are received each week, prior case counts and rates are updated accordingly.
2. Data are restricted to cases reported during March 1, 2020 – August 31, 2021, due to delays in reporting. During this time frame, sampling was conducted among hospitalized adults aged ≥18 years; therefore, counts are not shown, and weighted percentages are reported. The denominator for percentages among adults includes sampled cases with data on these conditions. No sampling was conducted among hospitalized children; therefore, the denominator for percentages of underlying medical conditions among children includes all pediatric cases with data on these conditions. Underlying medical conditions among pregnant women are included when "Adults" and/or "Pediatrics" is selected.

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

Multisystem Inflammatory Syndrome in Children (MIS -C)





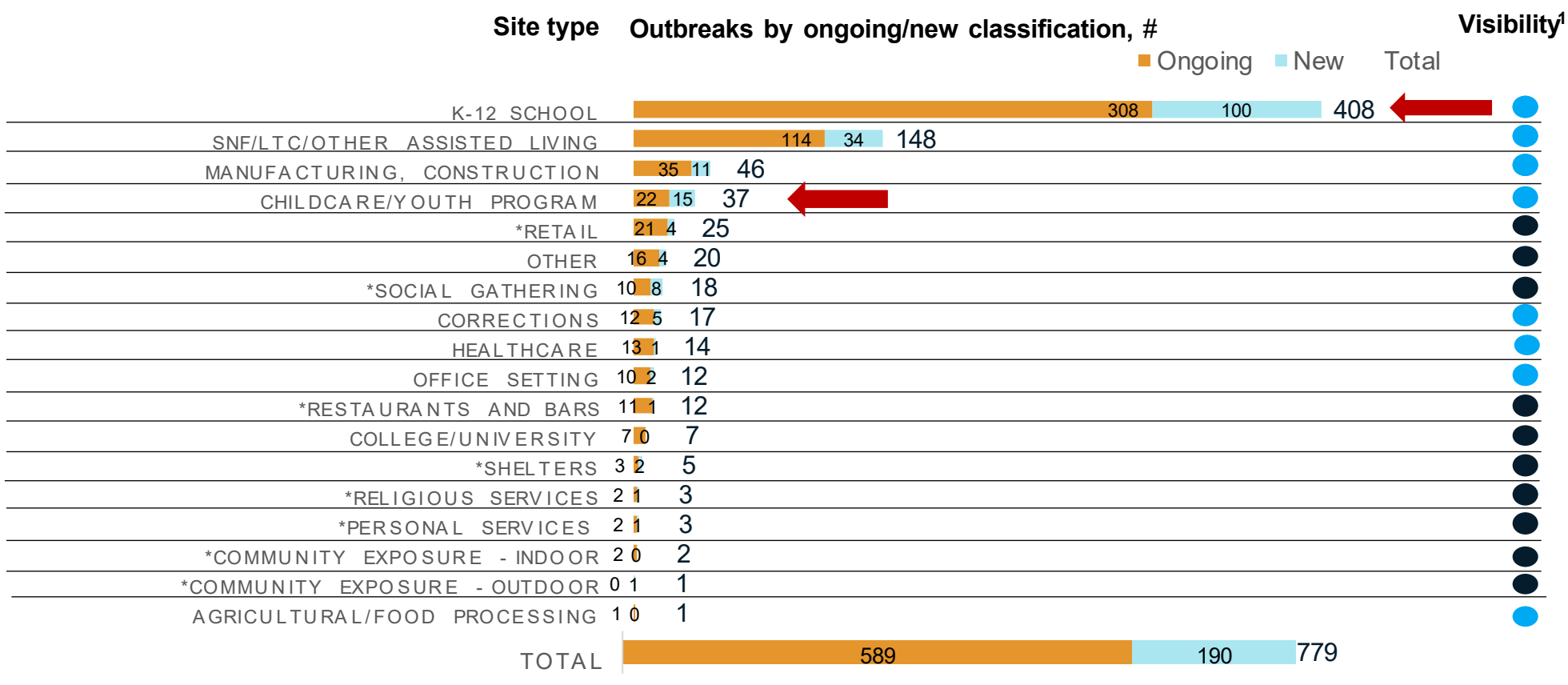
- **Multisystem Inflammatory Syndrome in Children (MIS-C)** is a condition in children and adolescents under 21 years of age where multiple organ systems become inflamed or dysfunctional which occurs in association with illness.
- 169 children and adolescents under 21 years have had MIS-C in Michigan
- 70.2% of MIS-C cases were admitted to the ICU
- Black/African American children are over-represented among cases (42.6%)
- Cases are most frequent in preparedness regions 2 North, 2 South and 6

Source: MDHHS and MIS-C Data and Reporting

What do we know about COVID-19 impact on Michigan children and schools

Number of Weekly Reported Outbreaks

Number of outbreak investigations by site type, week ending Oct 14



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.
NOTE (10/4): MDHHS adopted the new CSTE school cluster and outbreak definition which impacts how transmissions within school-sponsored settings are reported to the health department

Source: LHD Weekly Sitreps

Total number of active outbreaks is **up 3%** from previous week, with 190 new outbreaks identified

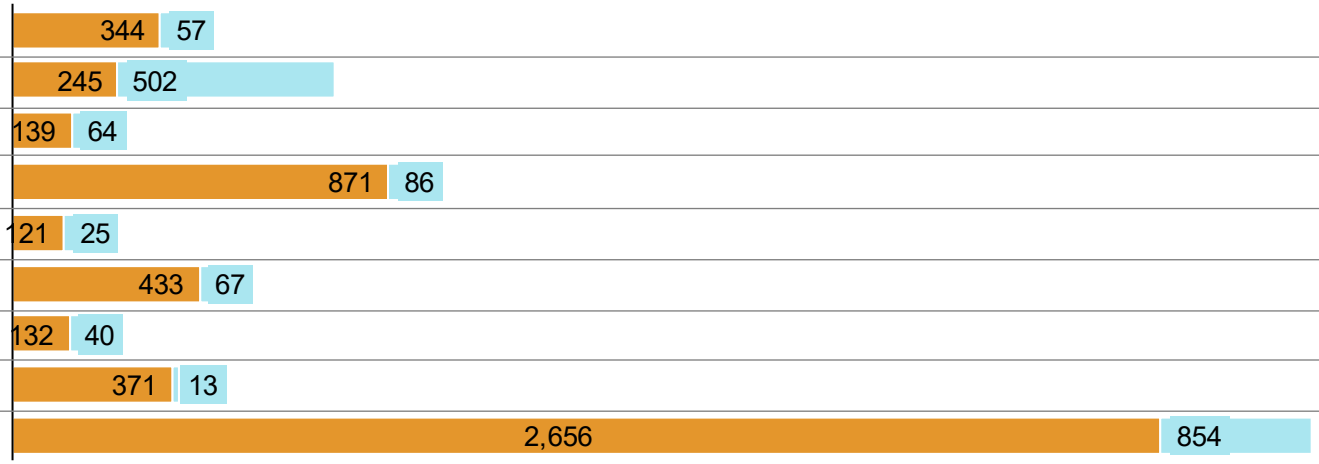
K-12 schools reported the greatest number of new outbreaks and clusters (100) this week, and there were an additional 15 new outbreaks in childcare and youth programs for a total of 115 outbreaks in settings primarily with 0-19-year-olds. (61% of all known new outbreaks)

The next greatest number of new outbreaks was among SNF/LTC (34), followed by manufacturing/construction (11), social gathering (8), and 10 other settings with at least 1 new outbreak in the last week.

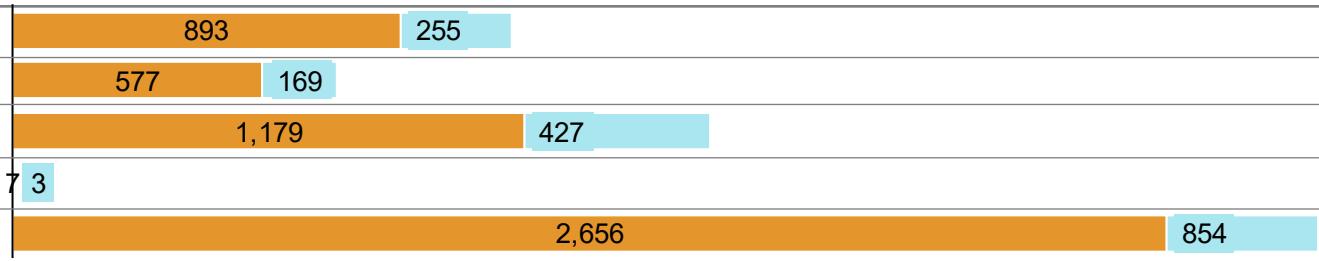
K-12 school clusters and outbreaks, recent and ongoing, week ending Oct 14

Number of reported outbreaks increased 4% since last week (393 to 408), including increases in High Schools (133 to 138), and Pre K-Elementary (164 to 182). Middle/Jr High (92 to 85), and Administration declined (4 to 3) since last week.

Region	Number of reported cases, #	Number of outbreaks	Range of cases per outbreak
Region 1	344 + 57	57	2-26
Region 2n	245 + 502	74	2-53
Region 2s	139 + 64	26	2-27
Region 3	871 + 86	90	2-48
Region 5	121 + 25	21	3-52
Region 6	433 + 67	74	2-61
Region 7	132 + 40	32	2-14
Region 8	371 + 13	34	3-46
Total	2,656 + 854	**408**	**2-61**



Grade level	Number of reported cases, #	Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	893 + 255	182	2-42
Jr. high/middle school	577 + 169	85	2-48
High school	1,179 + 427	138	2-61
Administrative	7 + 3	3	2-5
Total	2,656 + 854	**408**	**2-61**



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.
NOTE (10/4): MDHHS adopted the new CSTE school cluster and outbreak definition which impacts how transmissions within school-sponsored settings are reported to the health department

Source: LHD Weekly Sitreps

Layers of Defense Against COVID-19 in Schools

CDC recommended prevention strategies can be layered in different ways – the number and intensity of the layers can increase if community transmission increases

As community transmission increases, more holes appear in the defenses, meaning more layers of protection may be needed.

As the vaccination rate within a building or facility increases, fewer holes will appear in the defenses.

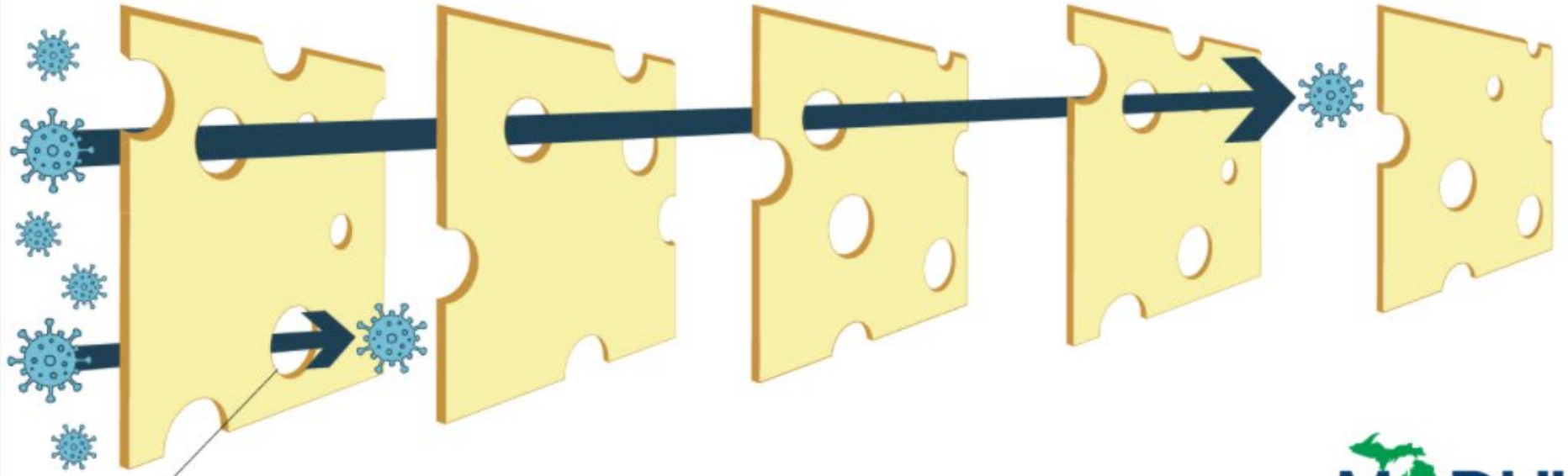
Promote **vaccination** against COVID-19 for eligible staff and students

Correctly and consistently use well-fitted **masks** that cover the nose and mouth

Arrange for **physical distancing**, including cohorting (grouping children together to reduce potential exposures)

Promote **screening** and **testing** for illness

Ensure **healthy environments** and **effective ventilation**



Holes in our defenses show that no one intervention is perfect, but layering them together increases success.

MDHHS
Michigan Department of Health & Human Services

Adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason

Preparing for Pfizer-BioNTech COVID-19 Vaccines Rollout for 5- to 11-year-olds

Vaccines and Related Biological Products Advisory Committee (VRBPAC) / Food and Drug Administration (FDA)

Meeting October 26th

Advisory Committee on Immunization Practice (ACIP)

Meeting November 2nd and 3rd

Expected day on/after ACIP

Centers for Disease Control and Prevention (CDC) Director Recommendation

Pfizer-BioNTech COVID-19 Vaccines

PRELIMINARY – SUBJECT TO CHANGE PENDING REGULATORY GUIDANCE AND AUTHORIZATION/APPROVAL

Description	Current Adult/Adolescent Formulation (1170 and 450 packs)	Future Pediatric Formulation
	Dilute Prior to Use	*Dilute Prior to Use*
Age Group	12 years and older	5 to <12 years**
Vial Cap Color	PURPLE 	ORANGE 
Dose	30 mcg	10 mcg
Injection Volume	0.3 mL	0.2 mL
Fill Volume (before dilution)	0.45 mL	1.3 mL
Amount of Diluent* Needed per Vial	1.8 mL	1.3 mL
Doses per Vial	6 doses per vial (after dilution)	10 doses per vial (after dilution)
Storage Conditions		
ULT Freezer (-90°C to -60°C)	9 months	6 months
Freezer (-25°C to -15°C)	2 weeks	N/A
Refrigerator (2°C to 8°C)	1 month	10 weeks

Q: Can the current adult/adolescent formulation (purple cap) be used to vaccinate children 5 to <12 years old once the vaccine is authorized for this age group?

A: No. For children under 12 years of age, you cannot use the current formulation and will need to use the future pediatric (orange cap) formulation.

Purple Cap – Adult/Adolescent: Authorized only for aged 12 years and older

Orange Cap – Pediatric: Future authorization for aged 5- to 12 years. A separate vaccine formulation specific for a 10mcg dose will be introduced.

***NOTE:** Use of the current adult/adolescent formulation (purple cap) to prepare doses for children 5 to <12 years would result in an injection volume for the 10mcg dose of 0.1mL, which is both generally considered too small for typical IM injections and has not been studied.*

**Diluent: 0.9% sterile Sodium Chloride Injection, USP (non-bacteriostatic; DO NOT USE OTHER DILUENTS*

***The vaccine is currently under emergency use authorization review by the Food and Drug Administration (FDA) for children 5 to <12 years old*

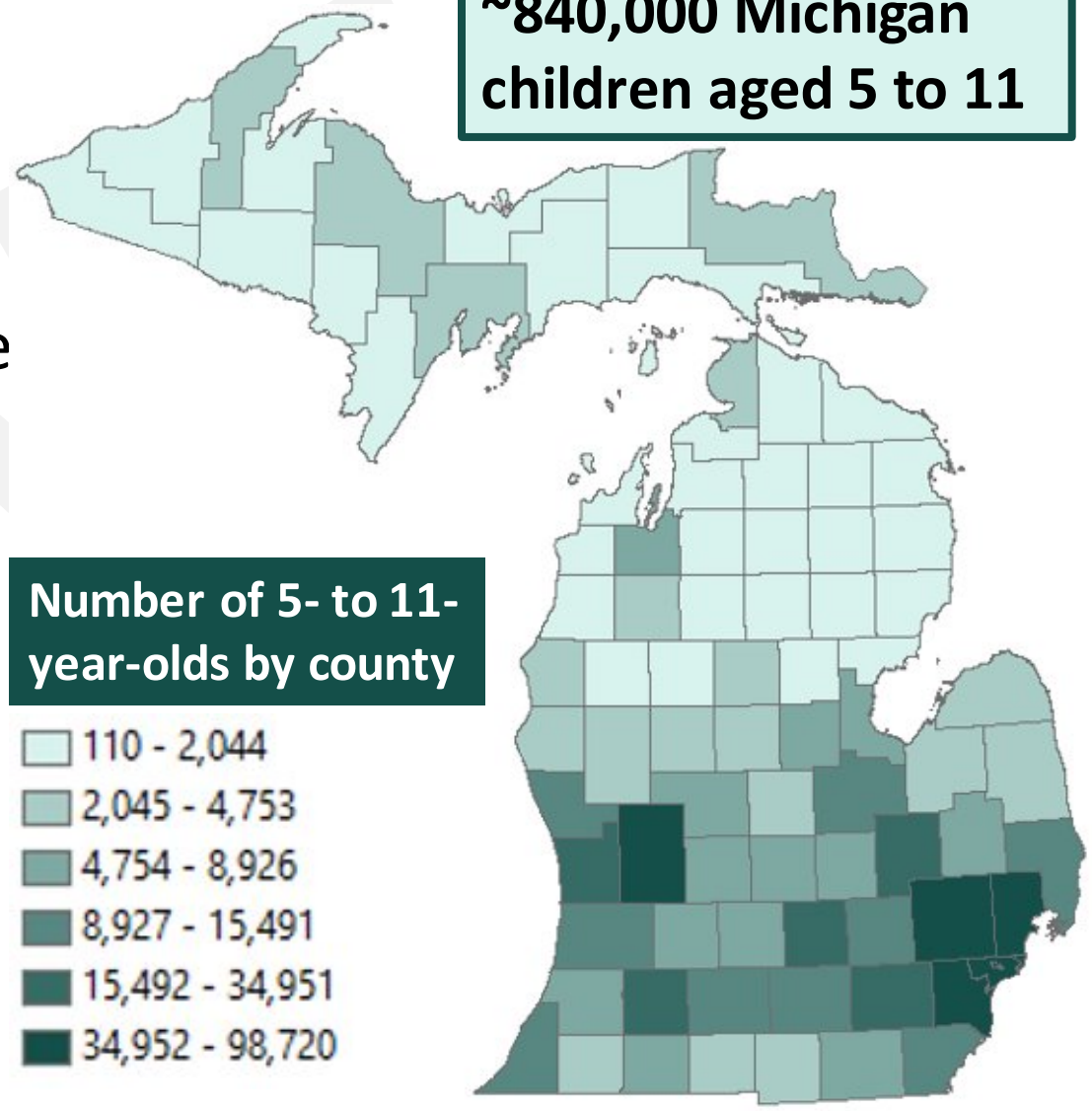
Full Series expected to be two doses three weeks apart

https://downloads.aap.org/DOPCSP/PfizerPedsOnePagerForPlanning-10.14.21.pdf

Preparing for Pfizer-BioNTech COVID-19 Vaccines Rollout for 5- to 11-year-olds

- Communication to providers
- Communication to the public
- Inclusive and equitable vaccine distribution
- Utilizing data to monitor progress and guide decision making
- Working to prepare key partners to make vaccine available to 5- to 11-year-olds:
  - Pediatric Provider Offices
  - School-based health programs
  - Pharmacies
  - Federally Qualified Health Centers
  - Local Health Departments
- **<u>Opportunity to co-administer on vaccines!</u>**

~840,000 Michigan children aged 5 to 11

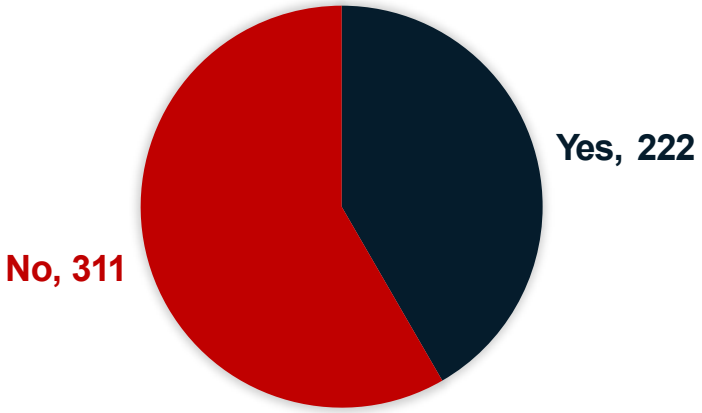


MI School Districts and Mask Policy as of Oct 18, 2021

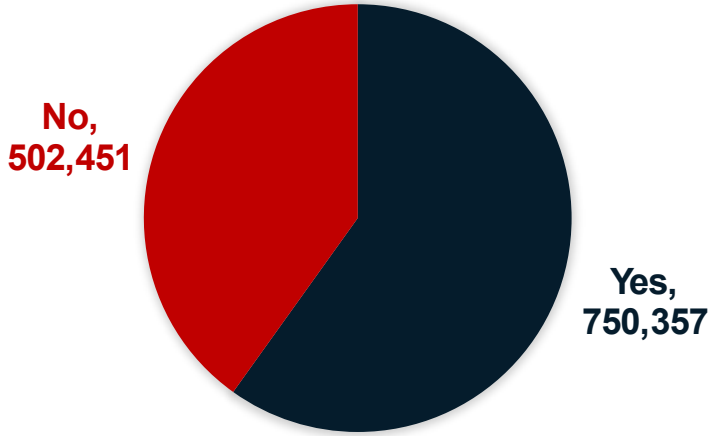
Yes – Any masking policy in some subset of school grades

No – No mask policies (includes unknown)

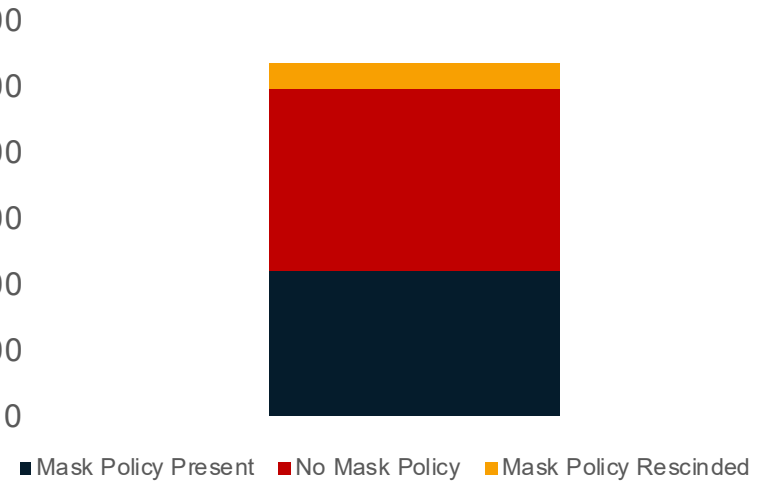
NUMBER OF SCHOOL DISTRICTS WITH MASK POLICIES IN K-12 SETTINGS



NUMBER OF STUDENTS* IN SCHOOL DISTRICTS WITH MASK POLICIES



NUMBER OF SCHOOL DISTRICTS WITH MASK POLICY REVERSAL

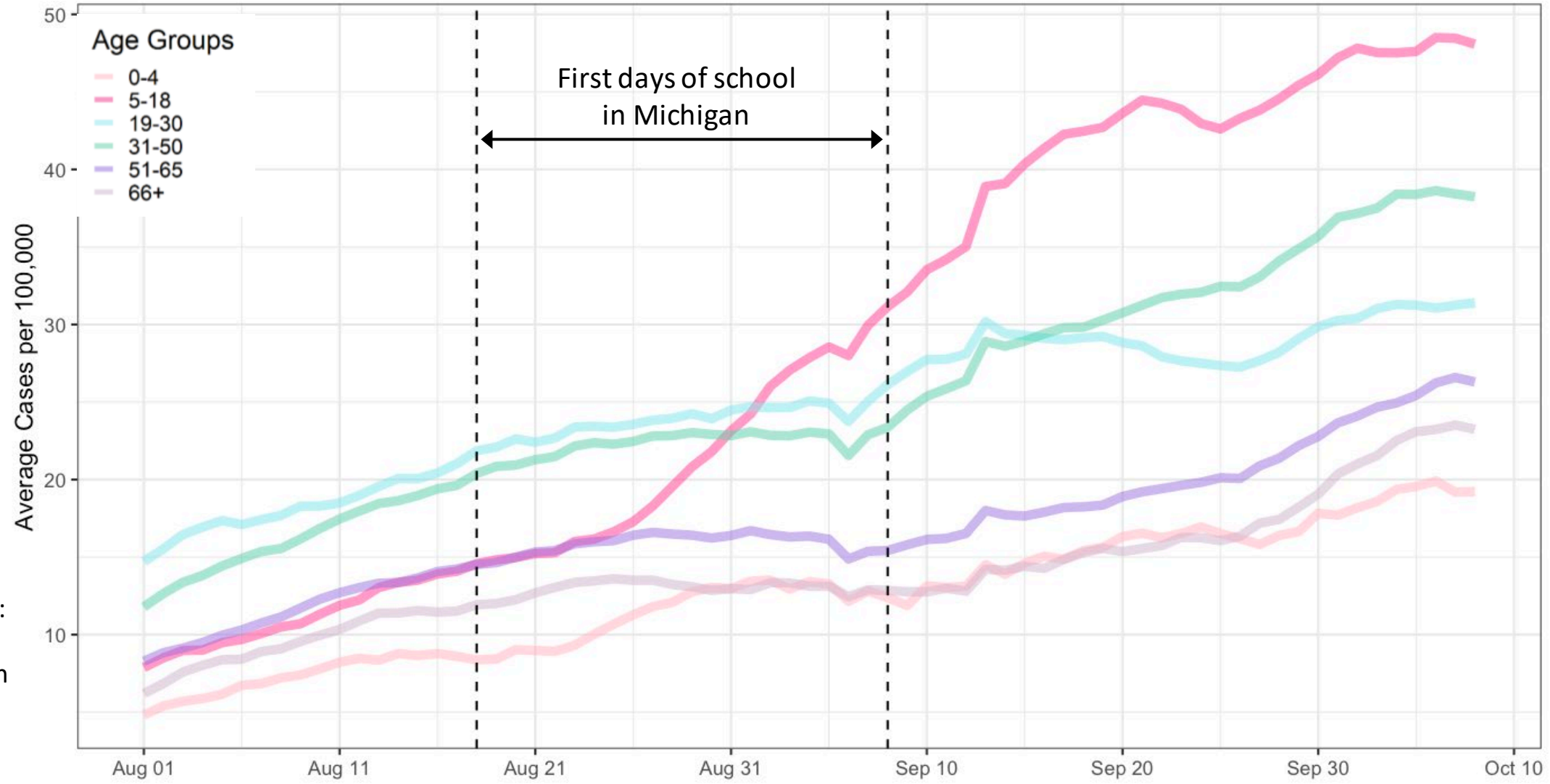


- 42% (222/533) of K-12 school districts have mandatory mask policies
- School districts with mandatory mask policies cover 60% (750,357/1,252,808) of K-12 students*
- Not all K-12 grades or students may be covered by masks polices; examples include policies for those through K-6, or only during higher levels of community transmission
- 7% of K-12 school districts have rescinded their mask policies

*** Student size based on school enrollment numbers; Buses and public transportation are federally required to enforce mask mandates**

Source: Executive Office of Governor School District Mask Policy Database

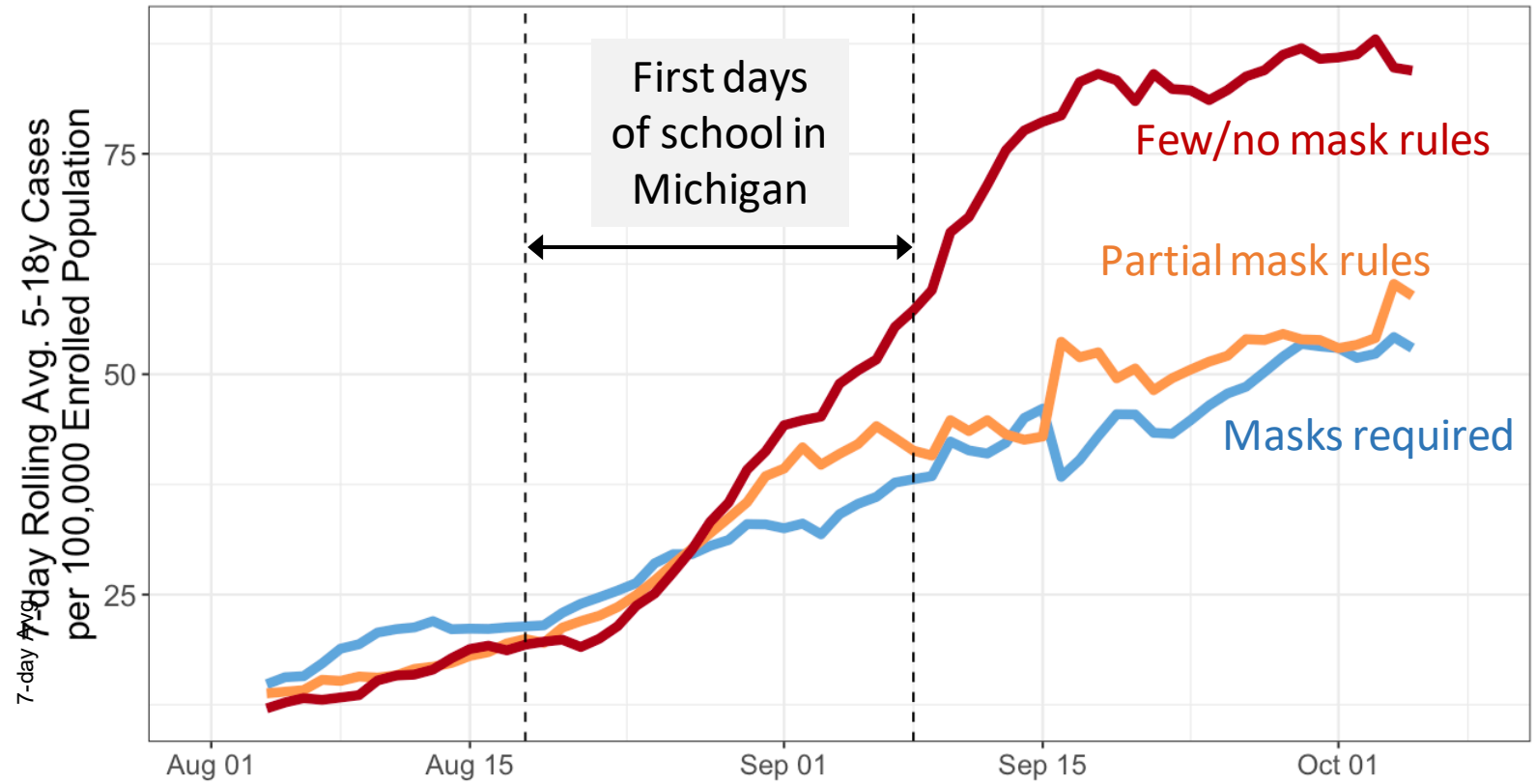
Case increases are largest in school aged children (5-18 year-olds), followed by 31-50 year-olds

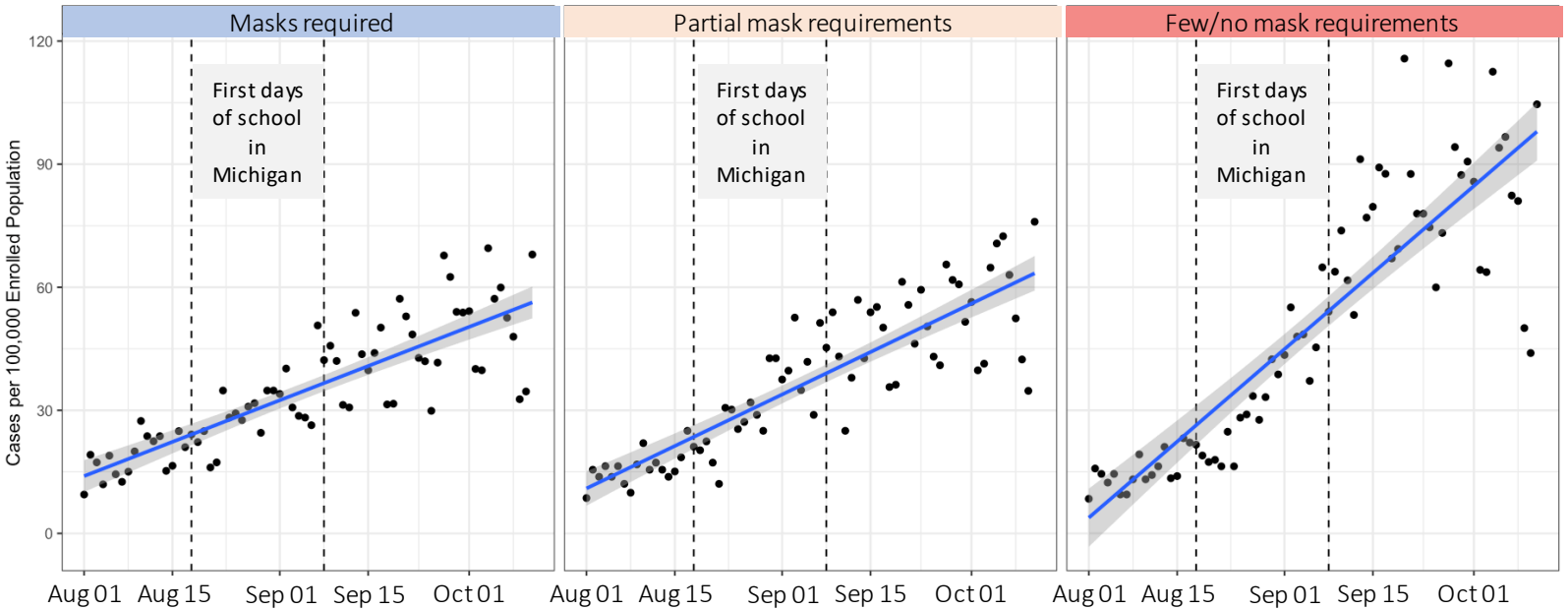


Data source: MDSS case data through 10/8/21, data as of 10/15/2021

Districts without mask requirements are experiencing higher case rates

- 5–18-year-old school population case rates are higher and rose faster in districts without mask requirements
- Districts with complete or partial mask requirements have seen lower case rates with slower increases
- Note districts may change categories as mask rules change
- Note that districts with mask rules may also have other prevention measures (vaccination, testing, etc.) that reduce transmission levels





Masks required = mask required for all grades; Partial mask req. = tiered, some grades, based on vax status, staff only; Few/no req. = no req. or buses only. Blue line & shaded region is a linear trend fit. Data Sources: MDSS/MDHHS case data through as of 10/15/21 geocoded to school district, EOG School District Mask Policy Tracker data. Note: Cases are among all 5-18 year olds, population is the school-enrolled population.

Global, National and Michigan Trends

Global and National Comparisons

Globally, 240,786,306 cases and 4,900,724 deaths (Data* through 10/18/21)

- Countries with the highest case count are U.S. (44,934,635), India (34,081,315), and Brazil (21,644,464)

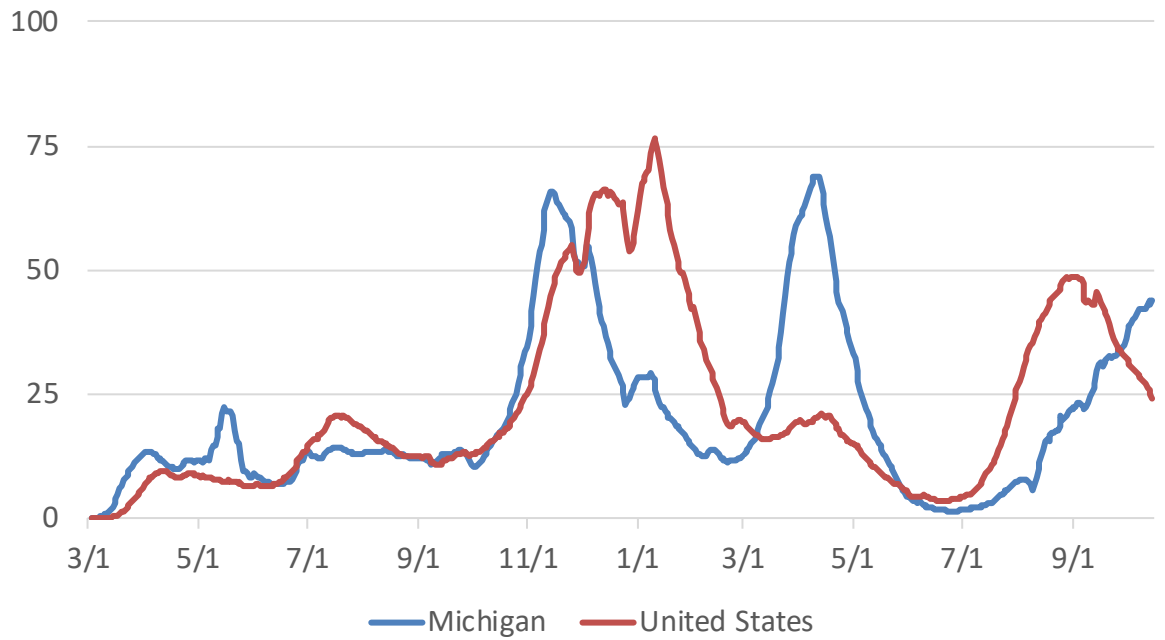
United States: Nearly all US jurisdictions have High community transmission¶

- Nationally, the 7-day moving average of daily new cases decreased 12.5% compared with previous 7-day moving average
- Percent positivity has decreased from the previous week, now at 5.7%. The number of PCR tests performed has decreased.
- ***While national case rates are decreasing, Michigan case rates continue to increase and are higher than U.S. rate***

Midwest states maintain High transmission levels†

- Overall decline in Region 5 but some states (MI, MN) are seeing increases

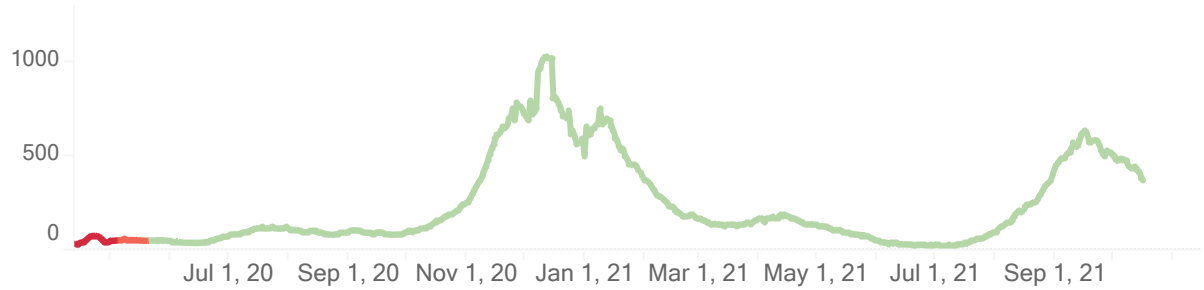
National and Michigan 7-day average New Cases per 100K†



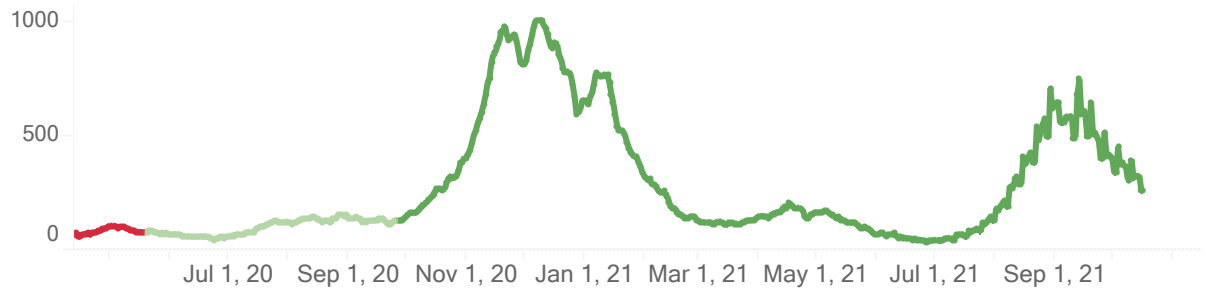
Source: *Johns Hopkins Coronavirus Resource Center; ¶ CDC COVID Data Tracker Weekly Review; † CDC COVID Data Tracker

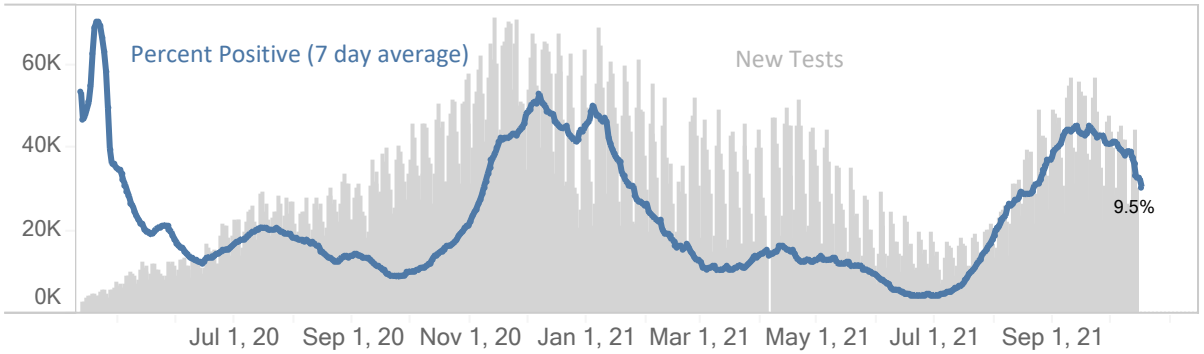
State Comparison: Ohio and Indiana

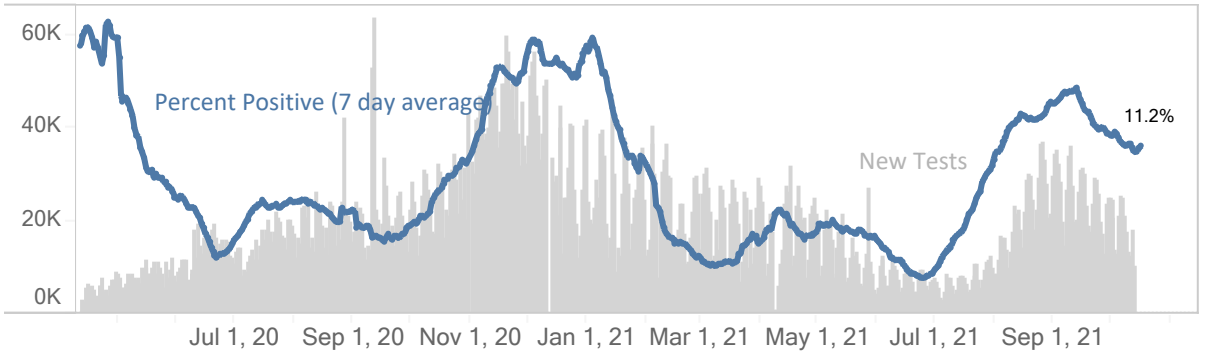
Ohio Confirmed New Cases / 1M (7 days average)

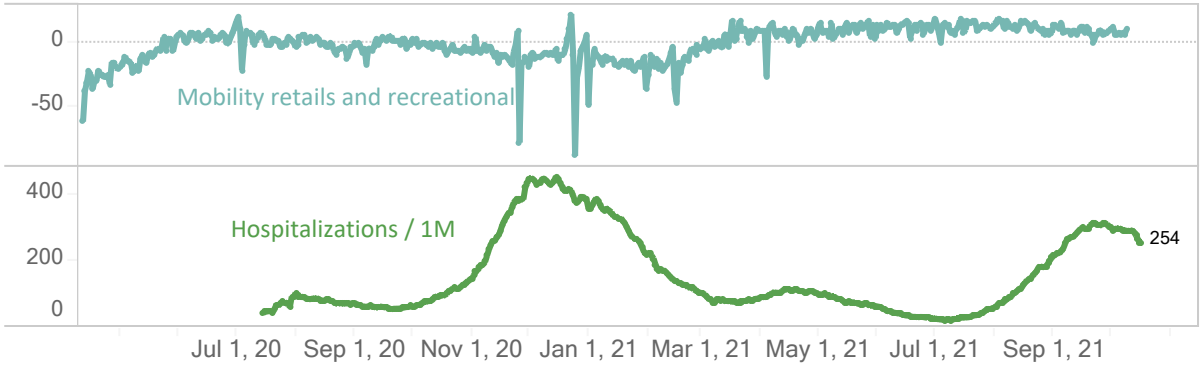


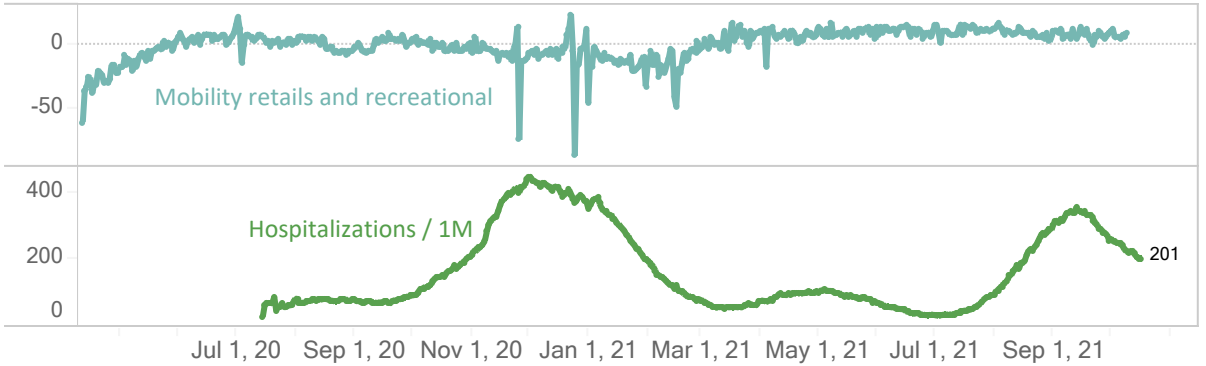
Indiana Confirmed New Cases / 1M (7 days average)



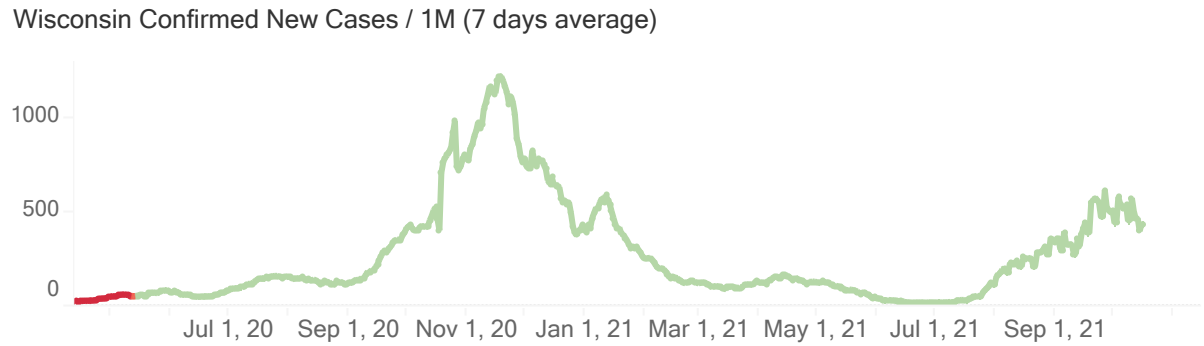


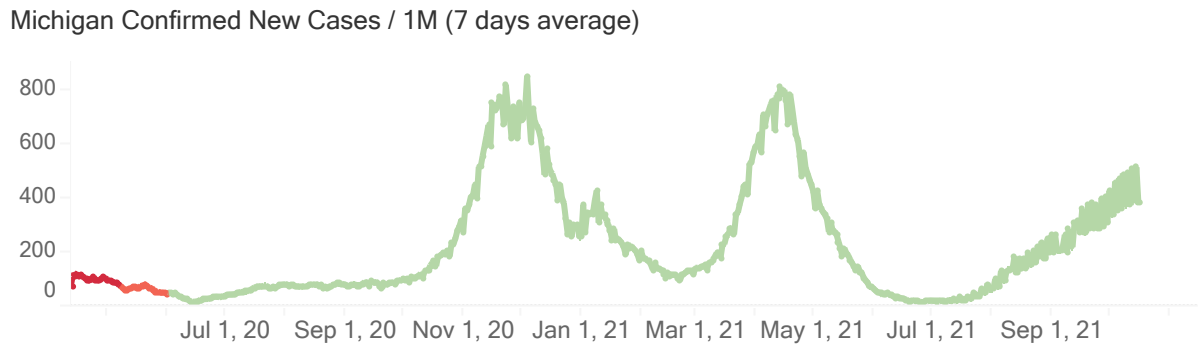


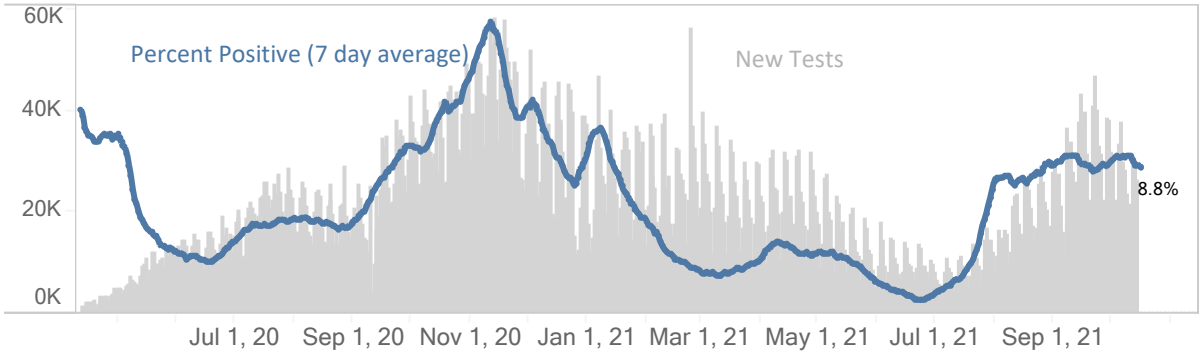


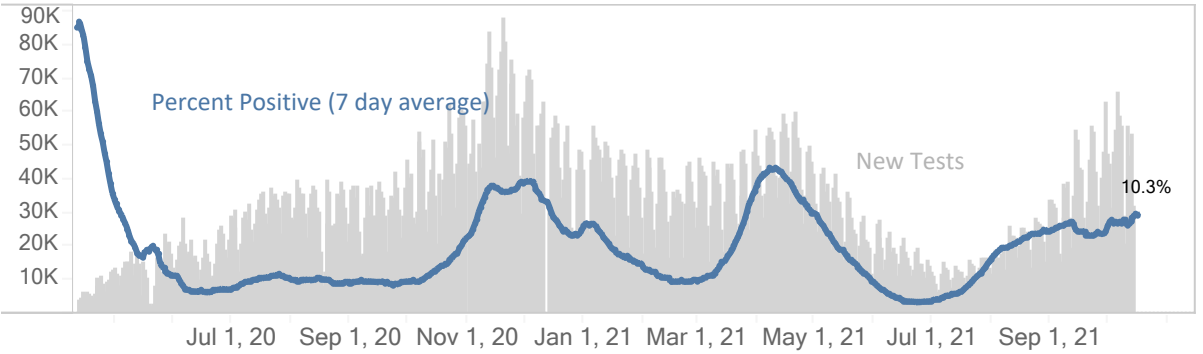


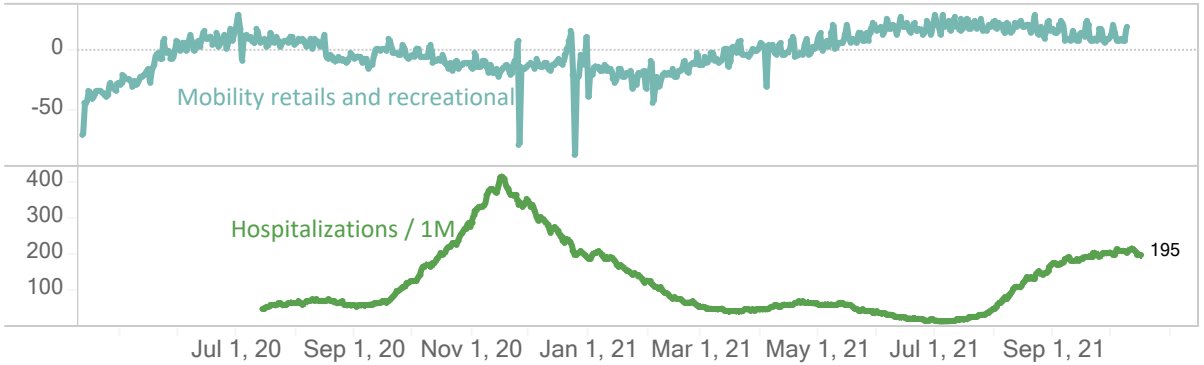
State Comparison: Wisconsin and Michigan

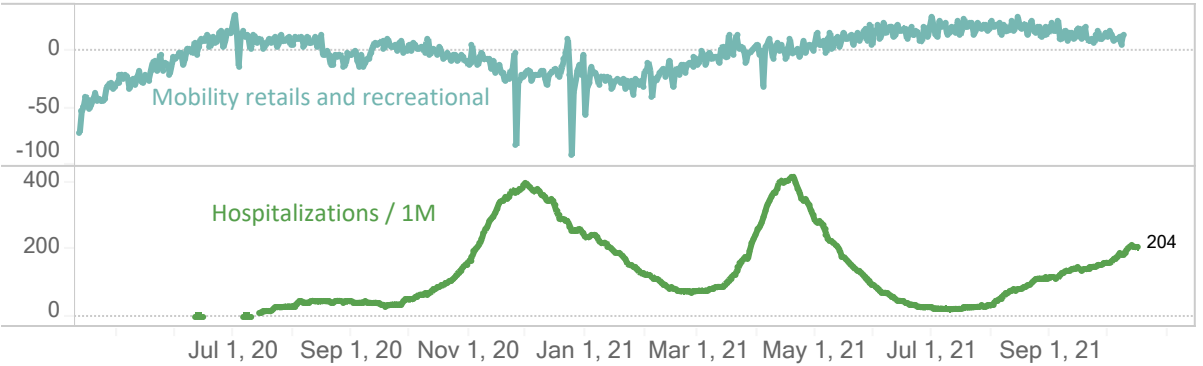






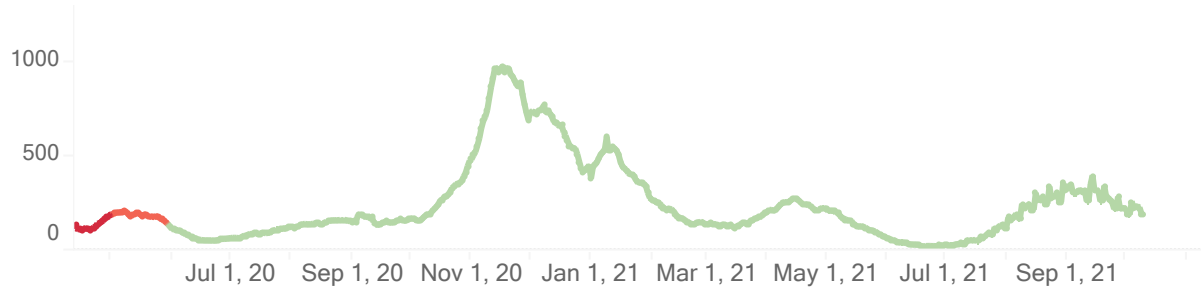




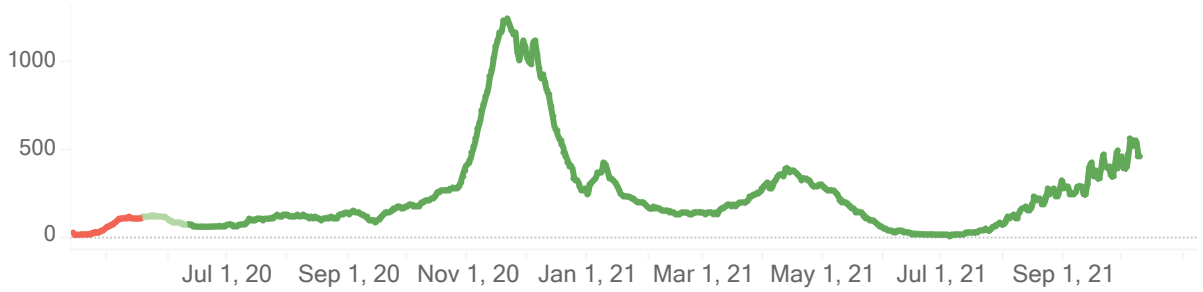


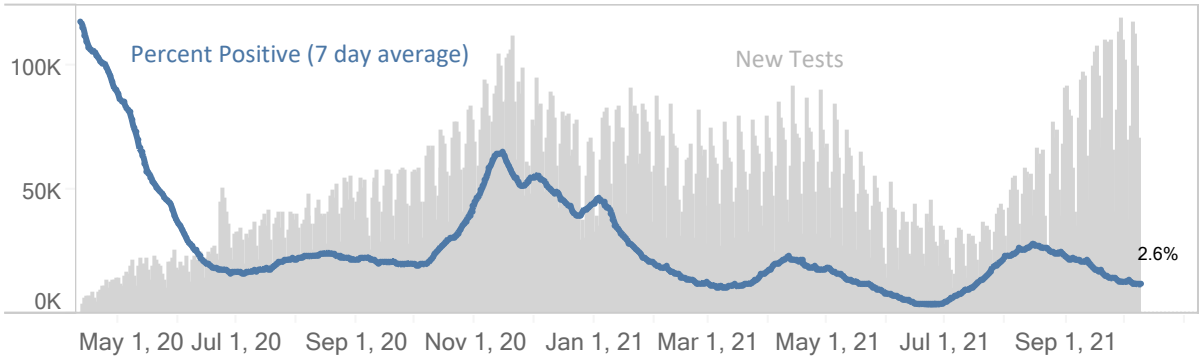
State Comparison: Illinois and Minnesota

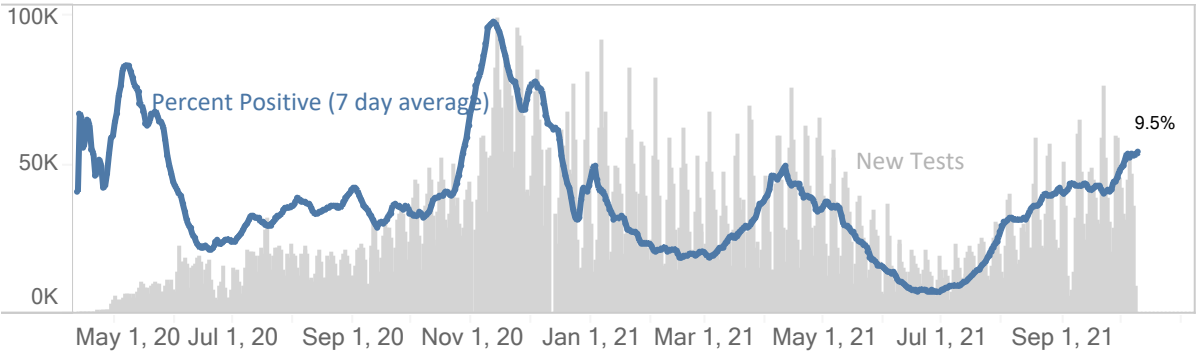
Illinois Confirmed New Cases / 1M (7 days average)

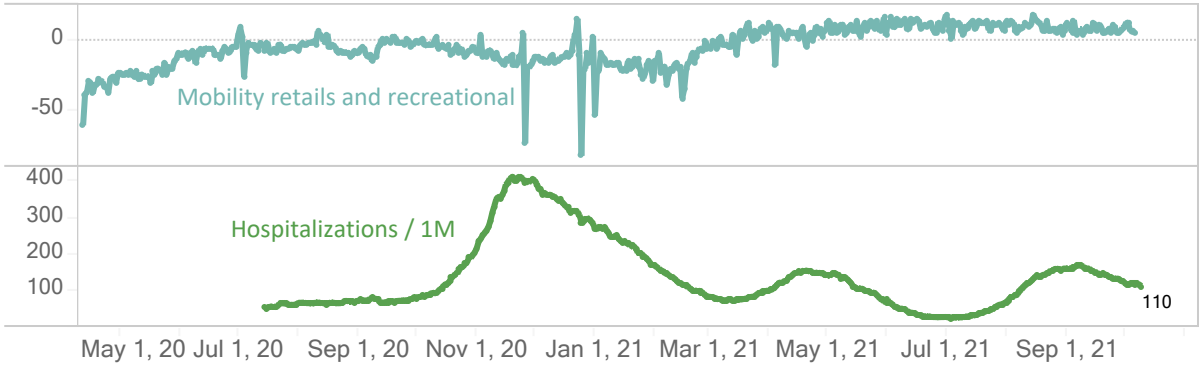


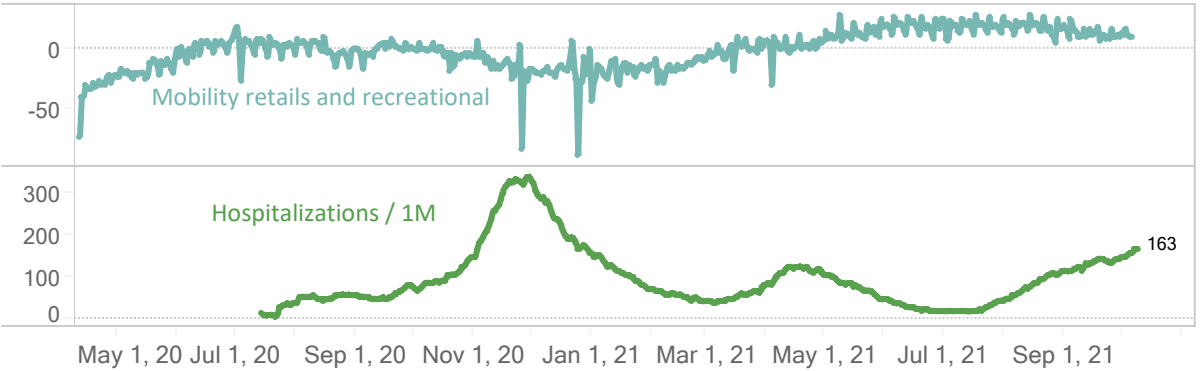
Minnesota Confirmed New Cases / 1M (7 days average)











Key Messages: COVID-19 Burden Among Younger Ages Remains High

Statewide positivity increased 11.3% (last week: 11.2%)

- This is a 1% increase in the past week (prior week: 9% increase)
- Positivity is increasing in most MERC regions
- Positivity in five regions is above 15%

Case rate has increased to 315.7 cases/million (last week: 304.4 cases/million)

- Increasing for three and a half months (June 26 low)
- Cases per million are plateaued or increasing in most MERC regions;
- 10-19-years-olds are experiencing the greatest case burden (648 daily cases; 516.3 cases/mil)

Michigan is at High Transmission level

- Nearly all 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 (142.9 cases/100,000 in last 7 days) with 52 states/territories in substantial or high transmission

Number of active outbreaks is up 3% from last week

- 190 new outbreaks were identified in the past week
- K-12 reported the most total outbreaks (308) and new outbreaks (100) this week

Confirmed and probable case indicators

Table Date: 10/18/2021 (7 days from date table was produced: 10/11/2021)

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)	% IP Beds Occupied by COVID-19 Cases	% Occupied IP Beds Trend	Absolute Deaths (per million)	Death Trend
Detroit	High	248.7	elevated incidence plateau	8.3	Increase - 3wk	4397.3	8.2	Increase - 13wk	2.8	Decrease - 1wk
Grand Rapids	High	404.7	elevated incidence plateau	16.8	Increase - 4wk	3771.4	13.6	Increase - 3wk	3.8	Decrease - 1wk
Kalamazoo	High	307.4	decline [11 days]	13.6	Increase - 3wk	3122.4	12.3	Increase - 2wk	3.6	Increase - 1wk
Saginaw	High	454.7	elevated incidence plateau	18.7	Increase - 6wk	3191.9	12.3	Increase - 4wk	5.1	Decrease - 1wk
Lansing	High	361.7	elevated incidence plateau	12.1	Increase - 3wk	2991.5	13.8	Increase - 14wk	2.7	<20 wkly deaths
Traverse City	High	386.2	elevated incidence plateau	16.7	Increase - 9wk	2749.9	12.3	Increase - 4wk	5.5	<20 wkly deaths
Jackson	High	396.2	elevated incidence plateau	17.0	Increase - 16wk	3392.7	20.6	Increase - 14wk	3.8	<20 wkly deaths
Upper Peninsula	High	504.1	decline [12 days]	15.2	Decrease - 1wk	2914.0	11.7	Increase - 6wk	3.8	<20 wkly deaths
Michigan	High	315.7	elevated incidence plateau	11.3	Increase - 3wk	3958.5	10.2	Increase - 13wk	3.4	Increase - 2wk

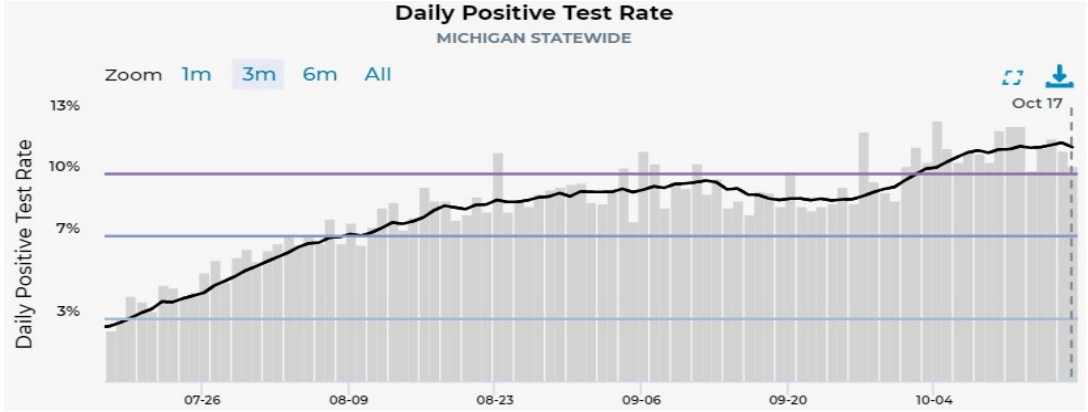
Cases Low: <7 | A: 7-20 | B: 20-40 | C: 40-70 | D: 70-150 | E: >=150

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

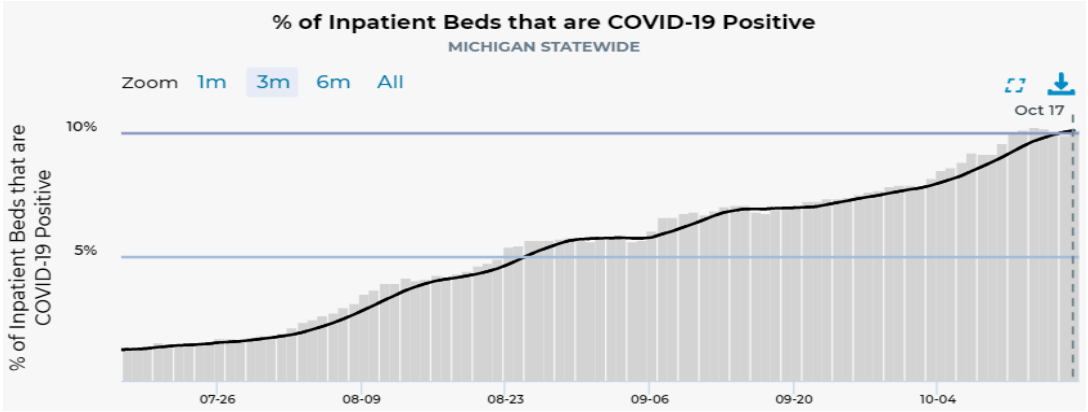
Time Trends – Positivity, Case Rates, Hospitalizations, Deaths

- COVID-19 transmission remains high, and several indicators continue to show increases

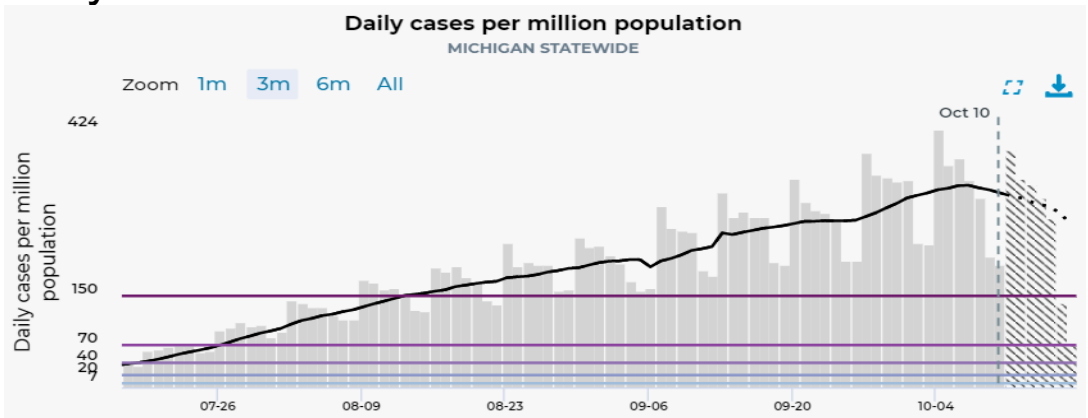
Daily Positive Test Rate



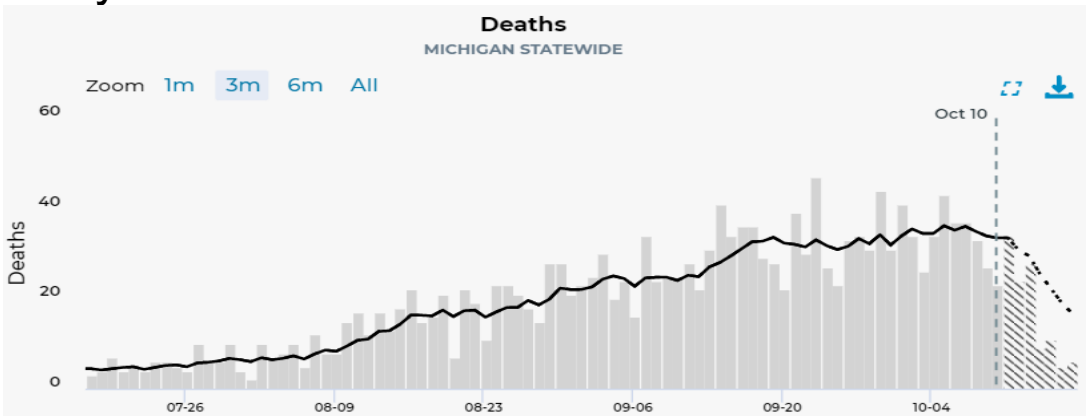
Daily Inpatient Beds Occupied by COVID patients



Daily Case Rate

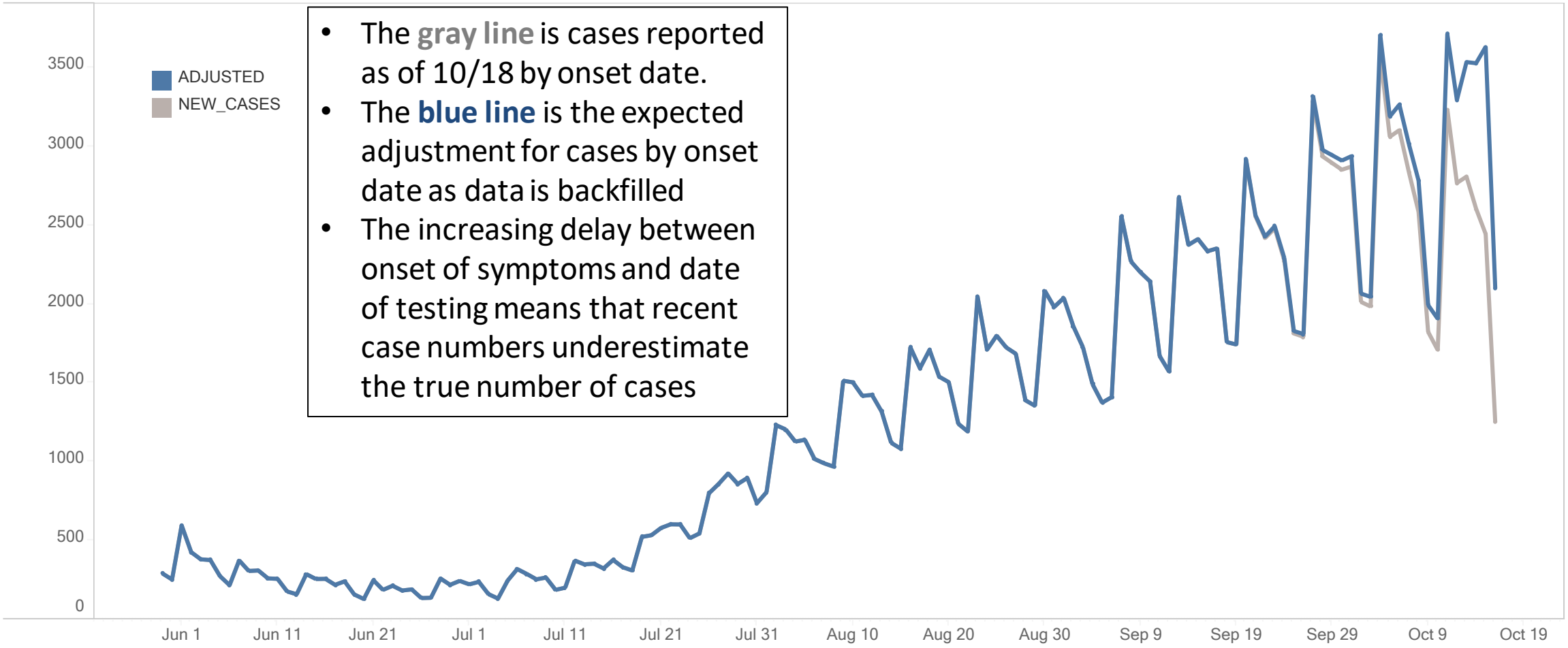


Daily Deaths



Michigan Lag adjusted new COVID cases by onset date

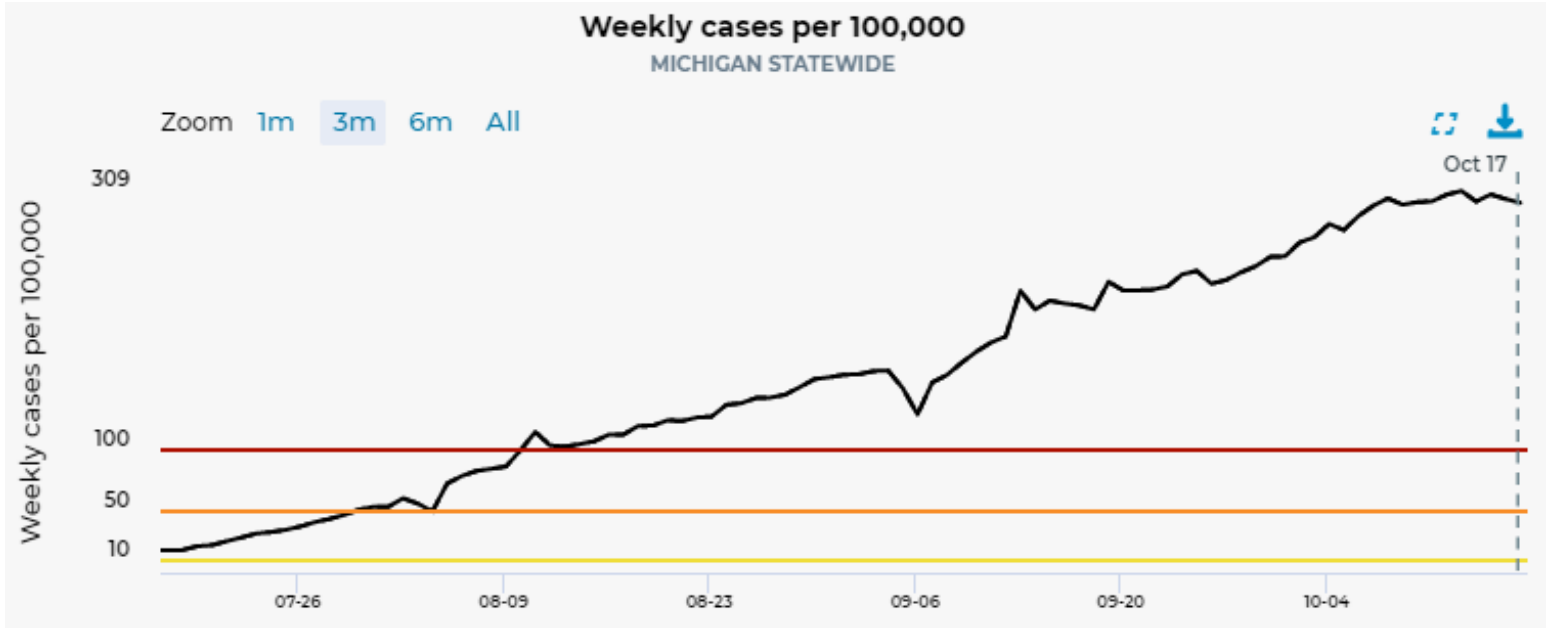
New confirmed cases by onset actual and adjusted as of October 18, 2021 (-2 days)

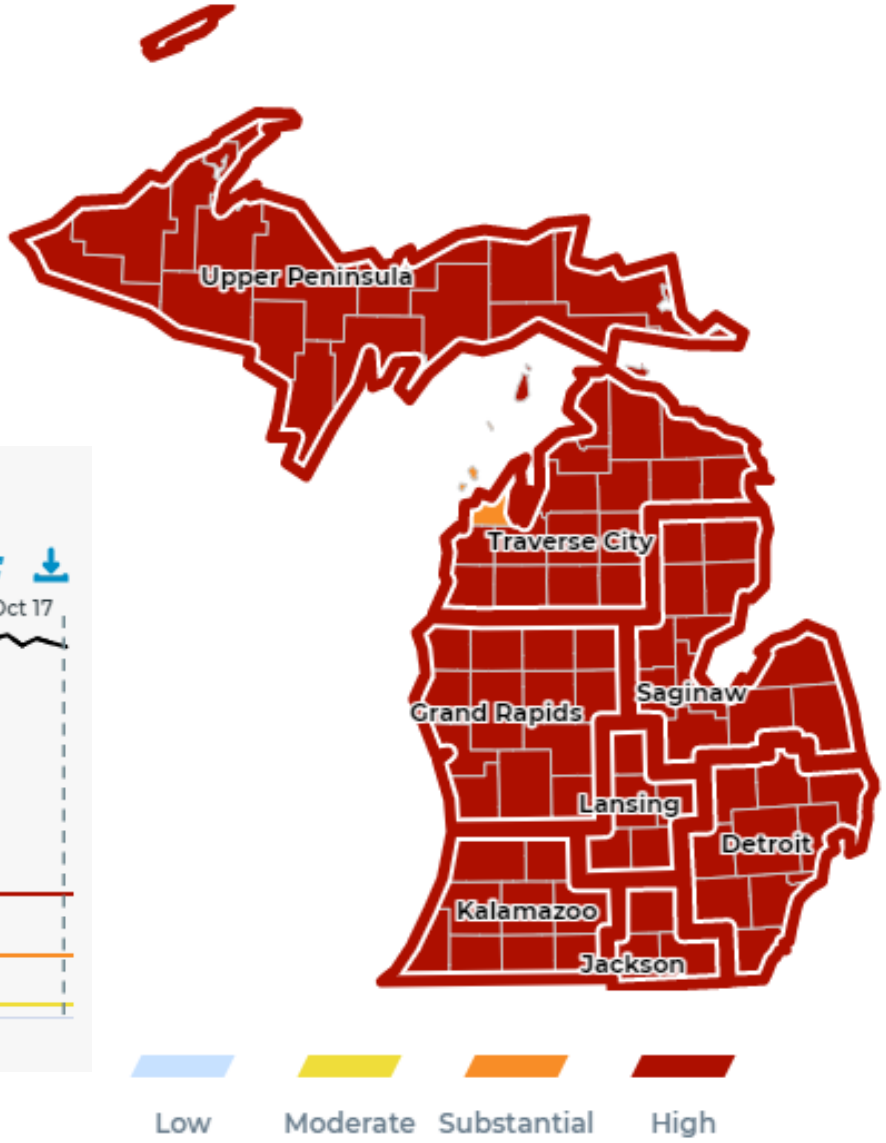


- The **gray line** is cases reported as of 10/18 by onset date.
- The **blue line** is the expected adjustment for cases by onset date as data is backfilled
- The increasing delay between onset of symptoms and date of testing means that recent case numbers underestimate the true number of cases

Michigan at High Transmission Level

[Dashboard | CDC | MI Start Map](#) for most recent data by reporting date

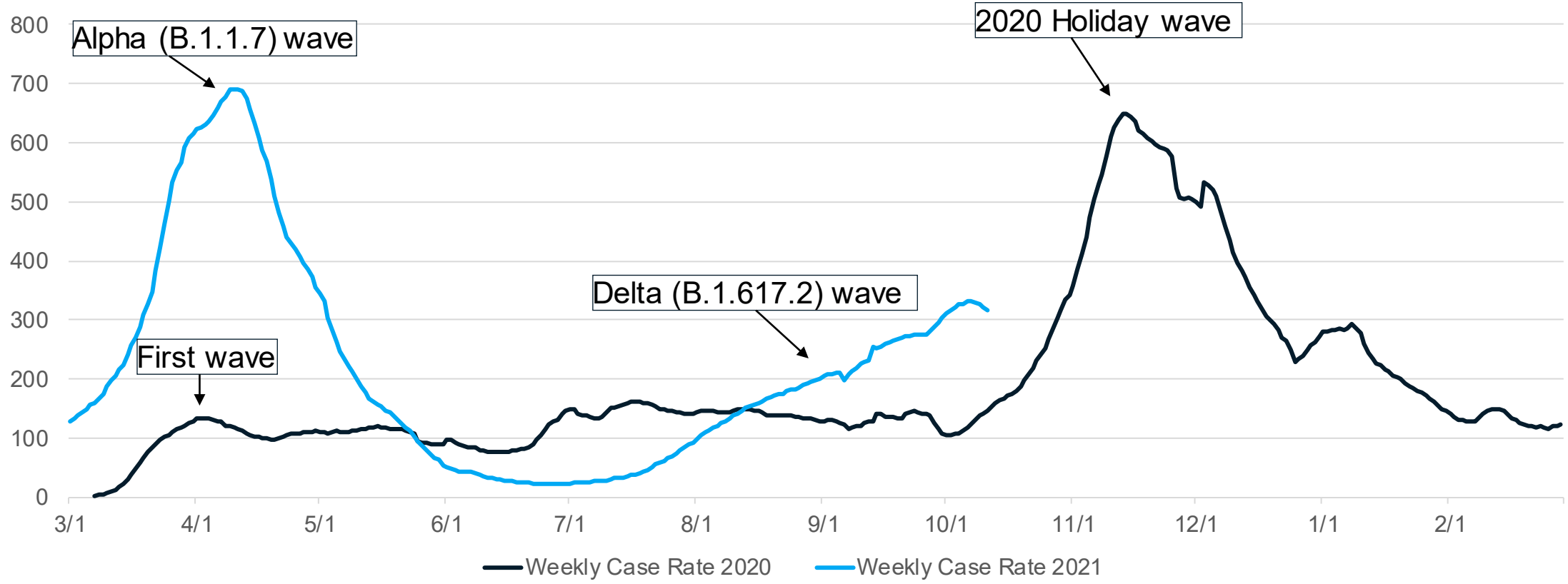




Time Trends – Annual Comparison

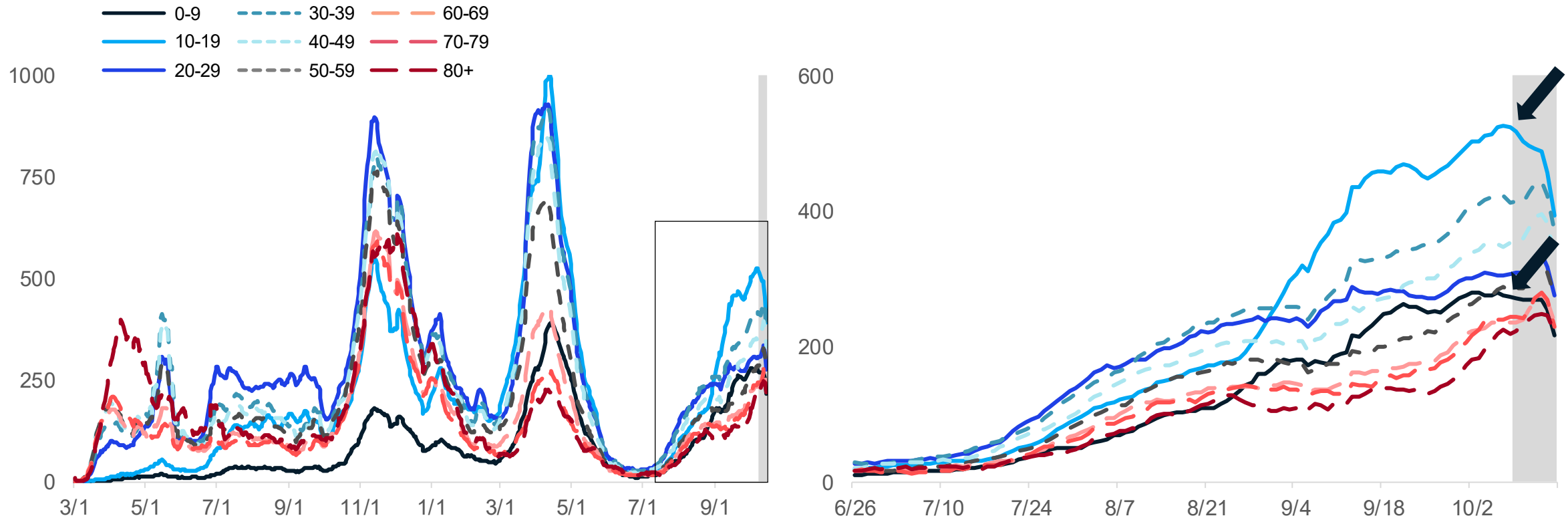
- We are heading into the winter months (and holiday season) starting at higher cases rates than last year

7- day rolling average of Rates 2020 vs 2021



Case Rate Trends by Age Group

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



- Case rate trends for all age groups are plateaued or increasing
- Case rates for all age groups are between 223 and 516 cases per million (through 10/10)
- Case rates are highest for 10-19-year-olds; case rate are increasing fastest for 80+ (+21%)

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

Number of Cases and CaseRates by Age Group, data as of Oct 18

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

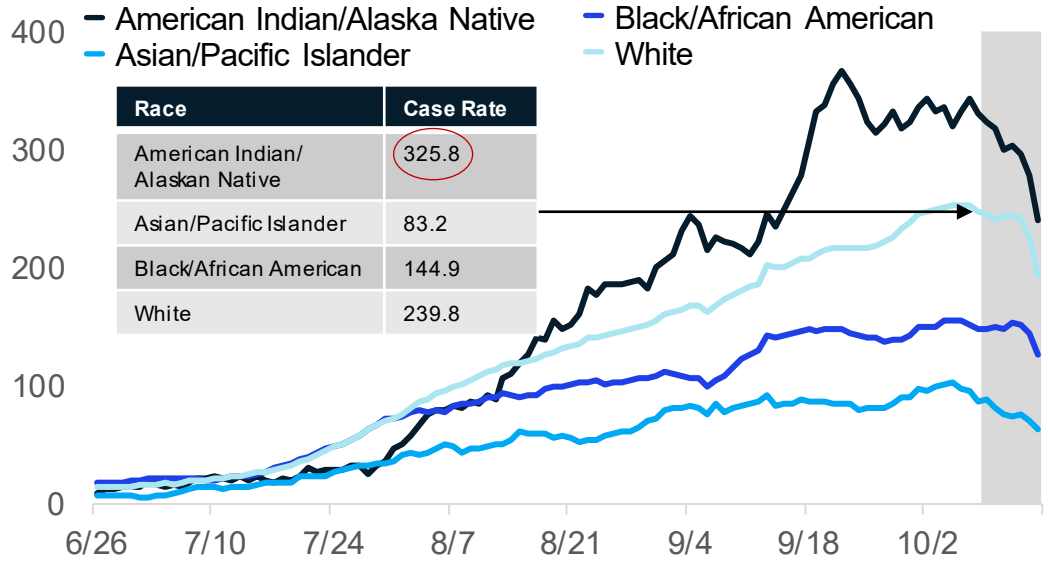
Age Group	Average† daily cases	Average† Daily Case Rate	One Week % Change (Δ#)*
0-9	316.7	274.7	-2% (-6)
10-19	**647.9**	**516.3**	**2% (+12)**
20-29	409.7	297.0	-3% (-13)
30-39	476.7	293.0	-5% (-24)
40-49	406.9	**345.0**	1% (+3)
50-59	366.3	271.3	-<1% (-<1)
60-69	292.4	229.2	2% (+6)
70-79	177.1	231.0	2% (+3)
80+	92.4	223.1	21% (+16)
Total¶	**3186.1**	**315.7**	**1% (+37)**

† Rolling 7-day average; ¶ Total may not reflect state due to missing age data
Note: Case information sourced from MDHHS and reflects date of onset of symptoms
Source: MDHHS – Michigan Disease Surveillance System

- Trend numbers and comparisons are being impacted by longer backfill times – the data in this table are comparing the two time points from the most recent data file
- Average daily number of cases (647.9) and avg. daily case rate (516.3 case/mil) are highest for those aged 10-19
- This week the highest growth was among those 80+ (21%)
- Case rates for age groups 10-19 and 40-49 are both higher than the state
- Case rates bottomed out on June 26, 2021

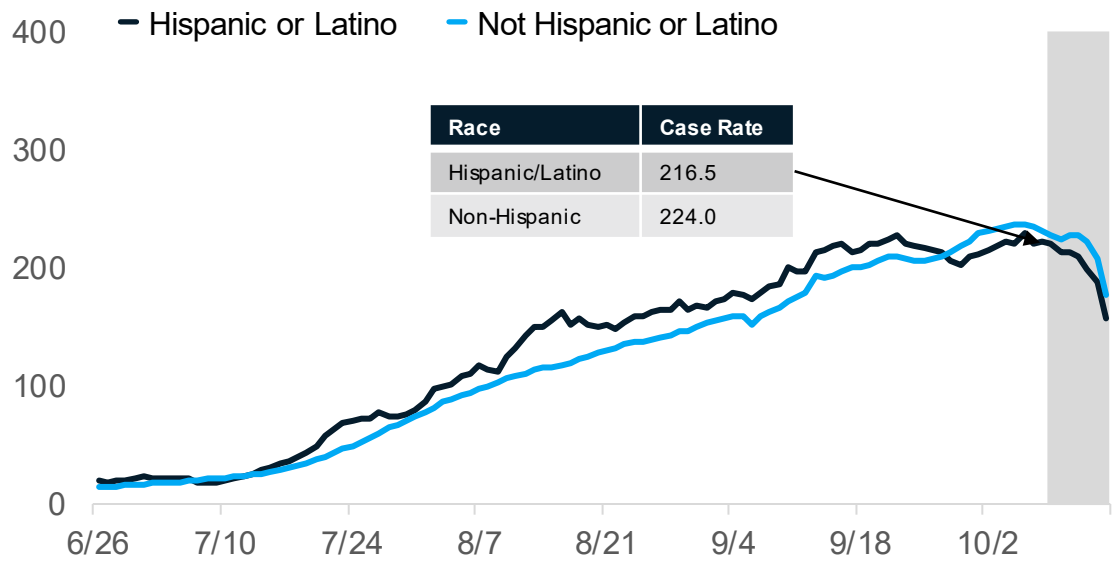
Case Rates by Reported Racial and Ethnic Group

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



Race	Case Rate
American Indian/ Alaskan Native	325.8
Asian/Pacific Islander	83.2
Black/African American	144.9
White	239.8

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



Race	Case Rate
Hispanic/Latino	216.5
Non-Hispanic	224.0

Updates since last week:

- Cases per million are plateaued for most racial and ethnic groups but the delay in reporting is impacting trend analysis
- The high number of cases with missing race/ethnicity data, and those multiracial or other are impacting the case rates shown here
- **American Indian/Alaskan Native have the highest case rates but are declining; Case rates for Non-Hispanic recently surpassed that for Hispanics**
- In the past 30 days, 23% (↓1%) of race data and 28% (↓1%) 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 Variants of Concern (VOC) in US and Michigan

SARS-CoV-2 Variants Circulating in the United States, Oct 1 – Oct 9 (NOWCAST)

**

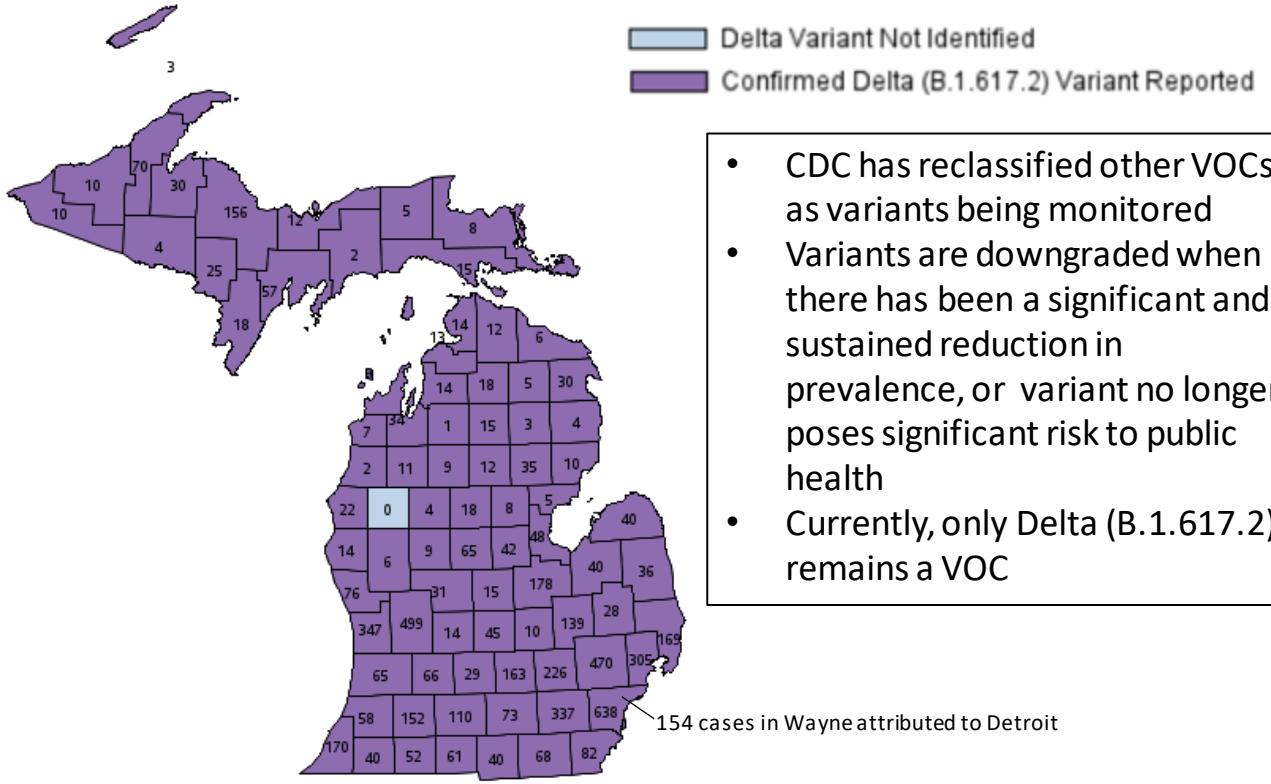
USA

WHO label	Lineage #	US Class	%Total	95%PI
Alpha	B.1.1.7	VBM	0.0%	0.0-0.0%
Gamma	P.1	VBM	0.0%	0.0-0.0%
Delta	B.1.617.2	VOC	99.9%	99.8-99.9%
	AY.1	VOC	0.0%	0.0-0.1%
	AY.2	VOC	0.0%	0.0-0.0%
Mu	B.1.621	VBM	0.0%	0.0-0.0%
Other	Other*		0.0%	0.0-0.1%

* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks displayed.
** 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.1.621 are aggregated with the parent lineage and included in parent lineage's proportion. Q.1-Q.8 are aggregated with B.1.1.7. AY.3-AY.38 and their sublineages are aggregated with B.1.617.2.

Data last updated Oct 18, 2021
Source: MDSS

Variants of Concern in Michigan, Oct 18



- CDC has reclassified other VOCs as variants being monitored
- Variants are downgraded when there has been a significant and sustained reduction in prevalence, or variant no longer poses significant risk to public health
- Currently, only Delta (B.1.617.2) remains a VOC

Variant	MI Reported Cases¶	# of Counties	MDHHS Est. Prevalence
B.1.617.2 (delta)	5,916	82	100%

Key Messages: Healthcare Capacity and COVID Severity

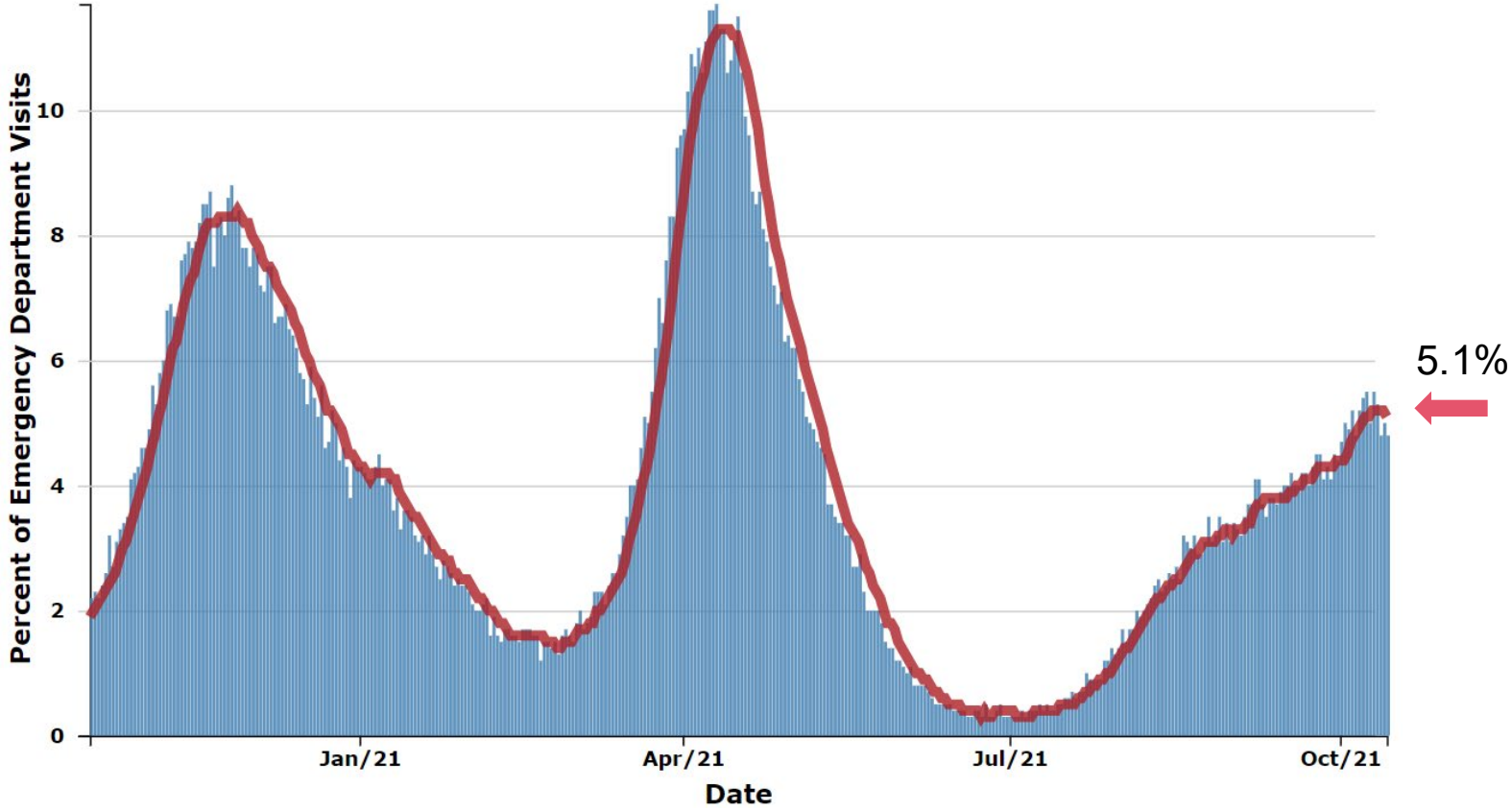
Emergency Department visits, Hospital Admissions, and Hospital Census are increasing

- 5.1% of ED visits are for COVID diagnosis (up from 4.9% last week)
- Hospital admissions have plateaued for most age groups this week
  - The largest one week increase in number of admissions was among those 50-59 years of age
- Hospital census has increased 4% (vs. up 18% week prior)
- Three regions experienced increasing trends in hospital census this week (Regions 2S, 3, and 7)
  - Regions 2S, 3, 6, and 7 now have above 200/million population hospitalized, and Region 3 is above 300/million
- Overall, volume of COVID-19 patients in intensive care has plateaued since last week (vs. 15% increase last week)

Death rate has increased to 3.4 daily deaths/million residents (up from 3.0 deaths/million last week)

- Overall trends for daily average deaths are increasing for American Indian/Alaskan Natives, Blacks/African Americans, Whites, Non-Hispanics, and Hispanics
- Currently, American Indian/Alaskan Natives and Whites have the highest death rate (3.3 deaths/million)
- In the past 30 days, there have been between 1 and 5 deaths among confirmed and probable COVID-19 cases under the age of 20

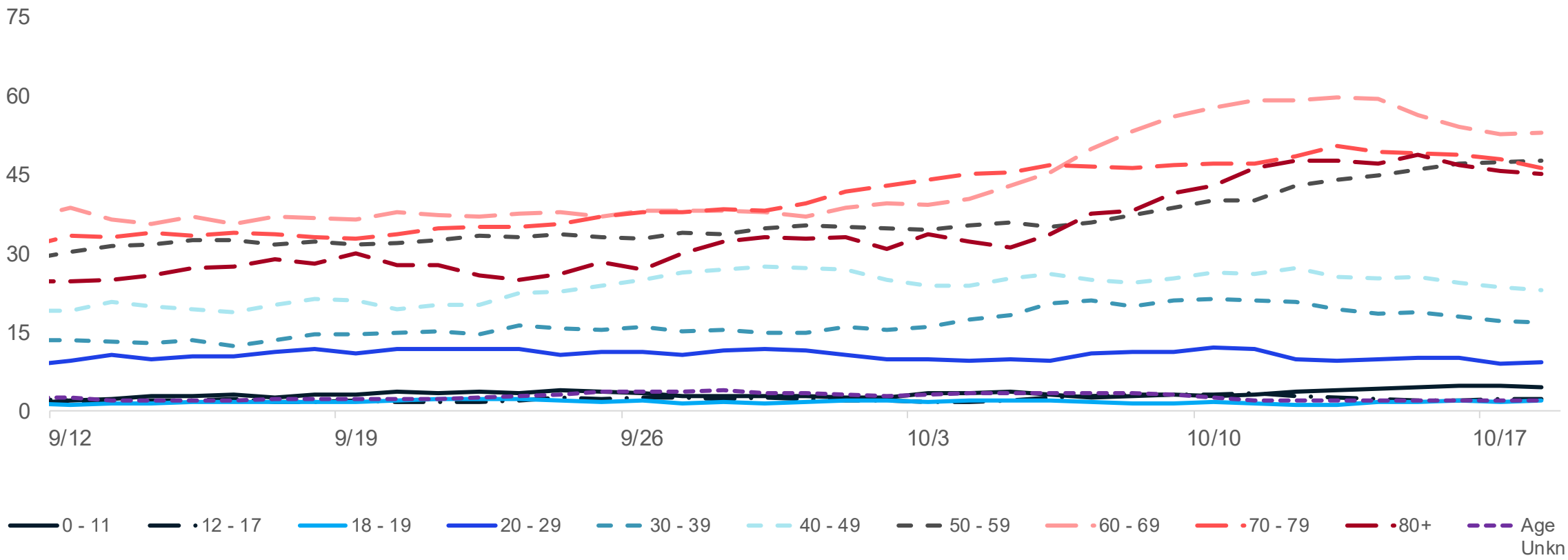
Michigan Trends in Emergency Department (ED) Visits for Diagnosed COVID-19



- Trends for ED visits have increased to 5.1% since last week (4.9% week prior)
- Trends vary by age groups with most age groups seeing an increase
- Over past week, those 65-74 years saw highest number of avg. daily ED CLI visits (7.0%), but those between 40+ all above state average

Source: https://covid.cdc.gov/covid-data-tracker/#ed-visits; data extracted on 10/18/2021

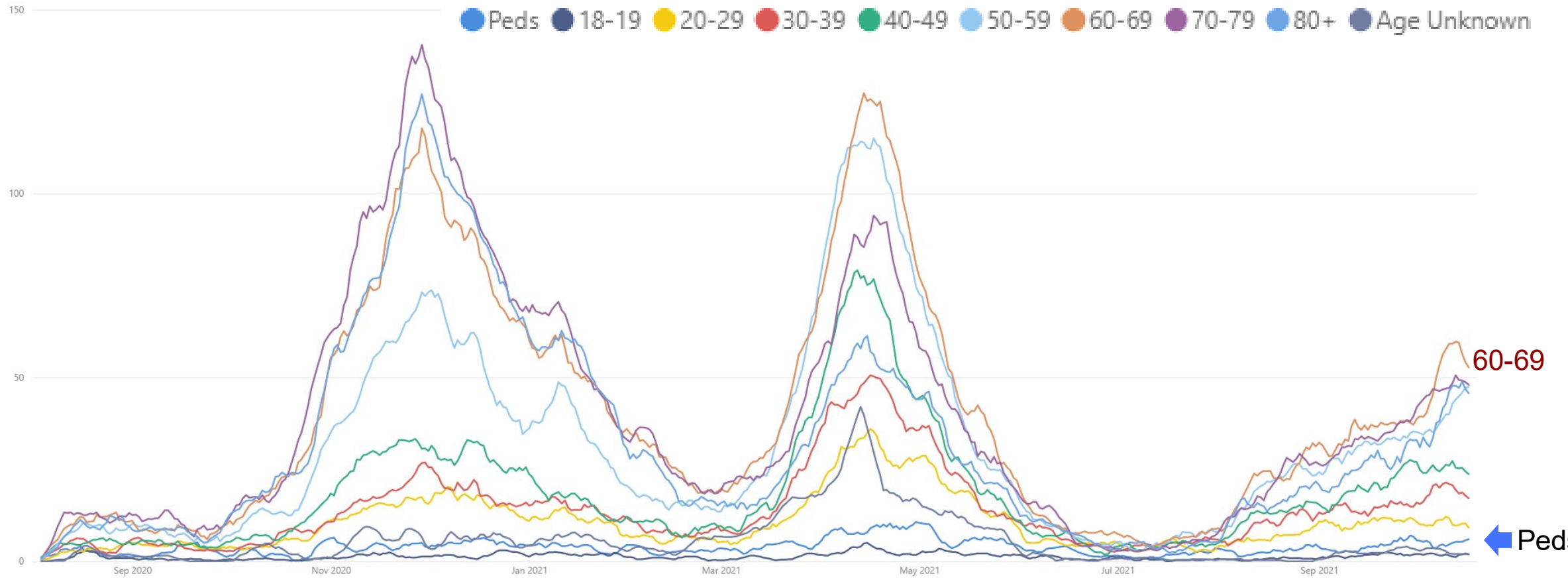
Average Hospital Admissions by Age Groups



- Trends for daily average hospital admissions have decreased 4% since last week (vs. 22% increase prior week)
- Most age groups experienced a one week decrease in daily hospital admissions
- Over the past week, those 60-69 years have seen the highest number of avg. daily hospital admissions (53 admissions)

Source: CHECC & EM Resource

Average Hospital Admissions Are Increase for all Age Groups



- Trends for daily average hospital admissions have decreased 4% since last week (vs. 22% increase prior week)
- Most age groups experienced a one week decrease in daily hospital admissions
- Over the past week, those 60-69 years have seen the highest number of avg. daily hospital admissions (53 admissions)

Source: CHECC & EM Resource

Number of Hospital Admissions and Admission Rates are Increasing for Most Age Groups

Daily new hospital admission per million by age group (7 -day rolling average)

Age Group	Average† daily number of hospital admissions	Average† Daily Hospital Admission Rate*	One Week % Change (Δ #)
0-11	4.6	3.3	39% (+1)
12-17	2.4	3.2	-29% (-1)
18-19	2.0	7.6	27% (+<1)
20-29	9.3	6.7	-21% (-2)
30-39	17.0	14.0	-19% (-4)
40-49	23.0	19.5	-12% (-3)
50-59	47.6	**35.2**	**19% (+8)**
60-69	**52.9**	**41.4**	-11% (-6)
70-79	46.1	**60.2**	-2% (-1)
80+	45.0	**108.6**	-3% (-1)
Total¶	**251.9**	**25.2**	**-4% (-10)**

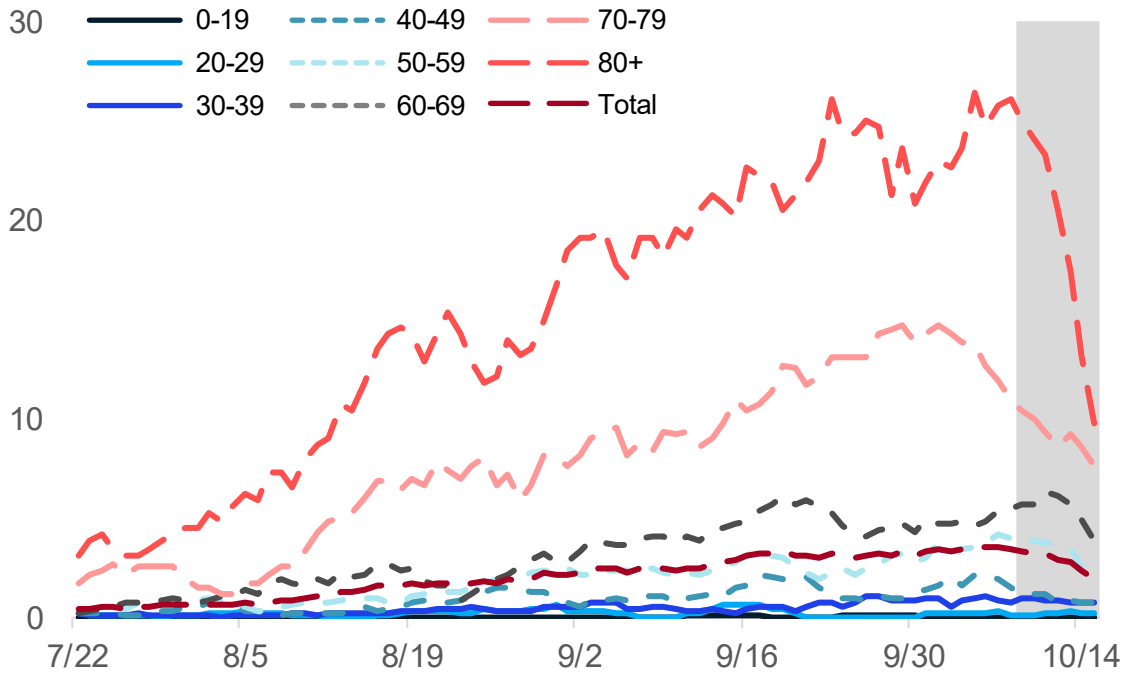
* Rate per 1 million residents; † Rolling 7-day average; ¶ Total may not reflect state due to missing age data
Note: Hospital Admission data reflects date data was submitted
Source: CHECC and EM Resource

- Through October 18, there were an average of 252 hospital admissions per day due to COVID-19, which is 10 (-4%) fewer than last week
- Most age groups saw a decline but several continued to increase
- The largest one week increase in number of admissions was among those 50-59 years of age (+8, +19%)
- Average number of daily hospital admissions (53) are highest for those aged 60-69, which is 6 fewer than last week
- Average daily hospital admission rate (108.6 hospital admissions/million) are highest for those aged 80+

Note: for some age groups, small changes in number of hospitalization admissions can cause large change in One Week Percent Change

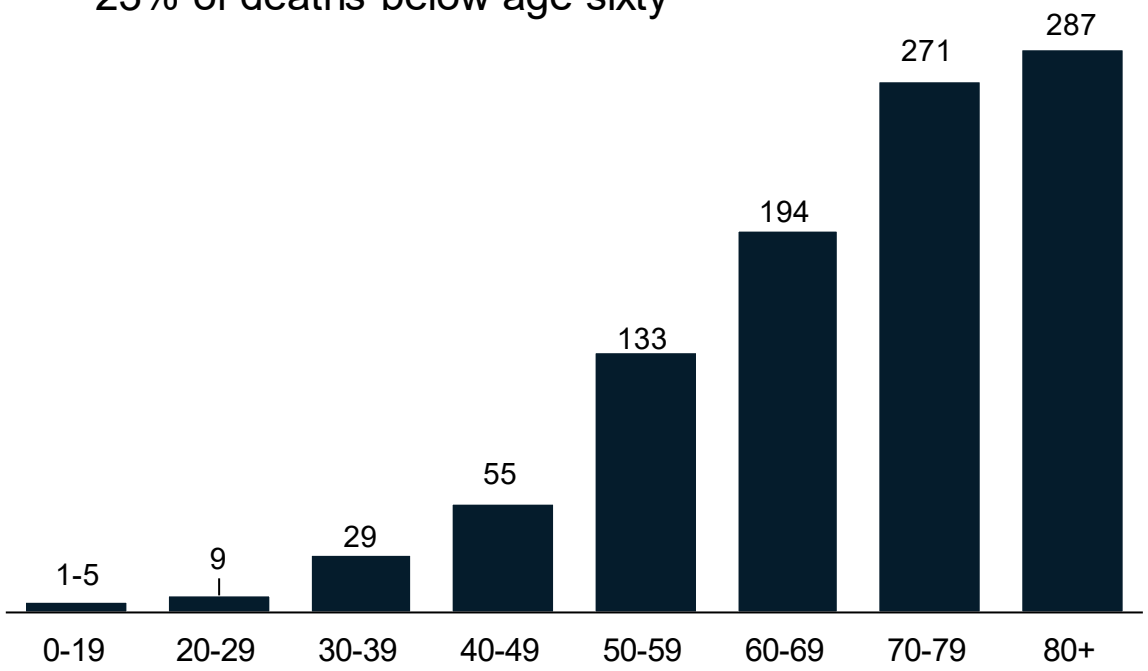
Average and total new deaths, by age group

Daily COVID-19 deaths in confirmed and probable cases per million by age group (7 day rolling average)



Total COVID-19 deaths in confirmed and probable cases by age group (past 30 days, ending 10/11/2021)

- 23% of deaths below age sixty

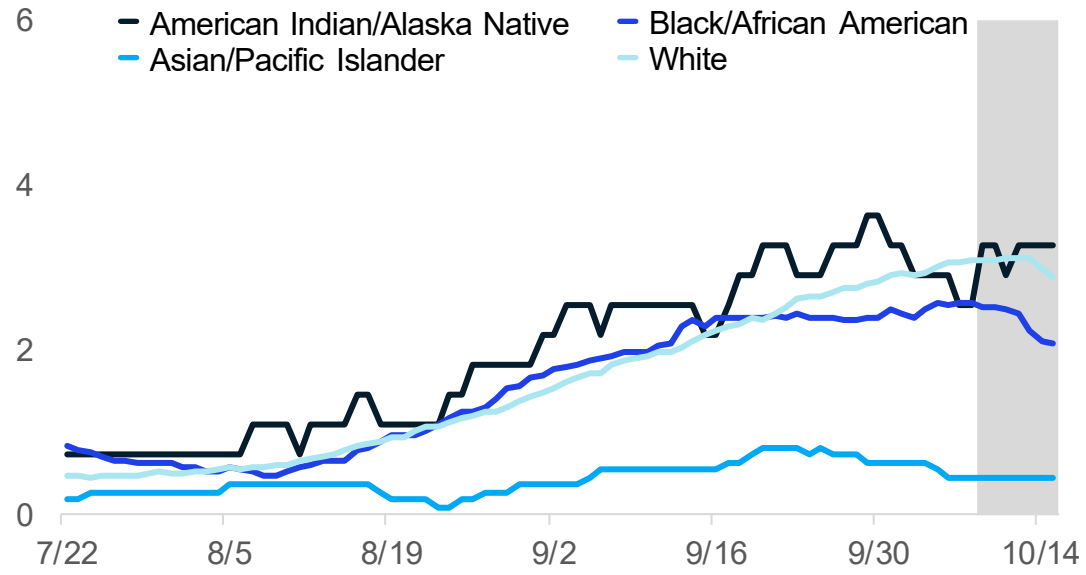


- Through 10/11, the 7-day avg. death rate is more than 10 daily deaths per million people for those over the age of 70
- In the month, there have been between 1-5 deaths among confirmed and probable COVID-19 cases under the age of 20
- 30-day proportion of deaths among those under 60 years of age is steady from the prior week

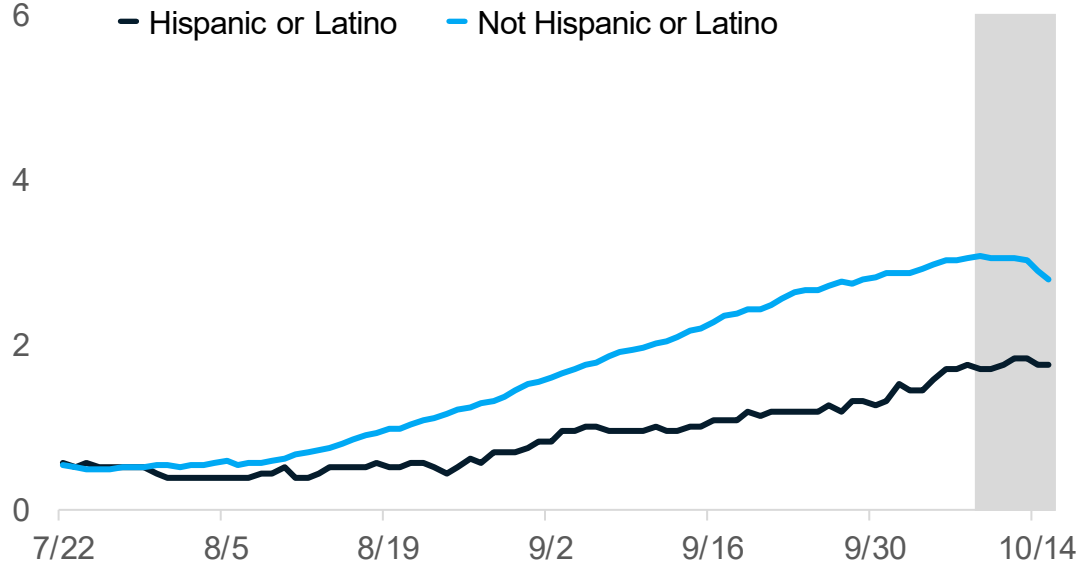
Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System (MDSS)

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

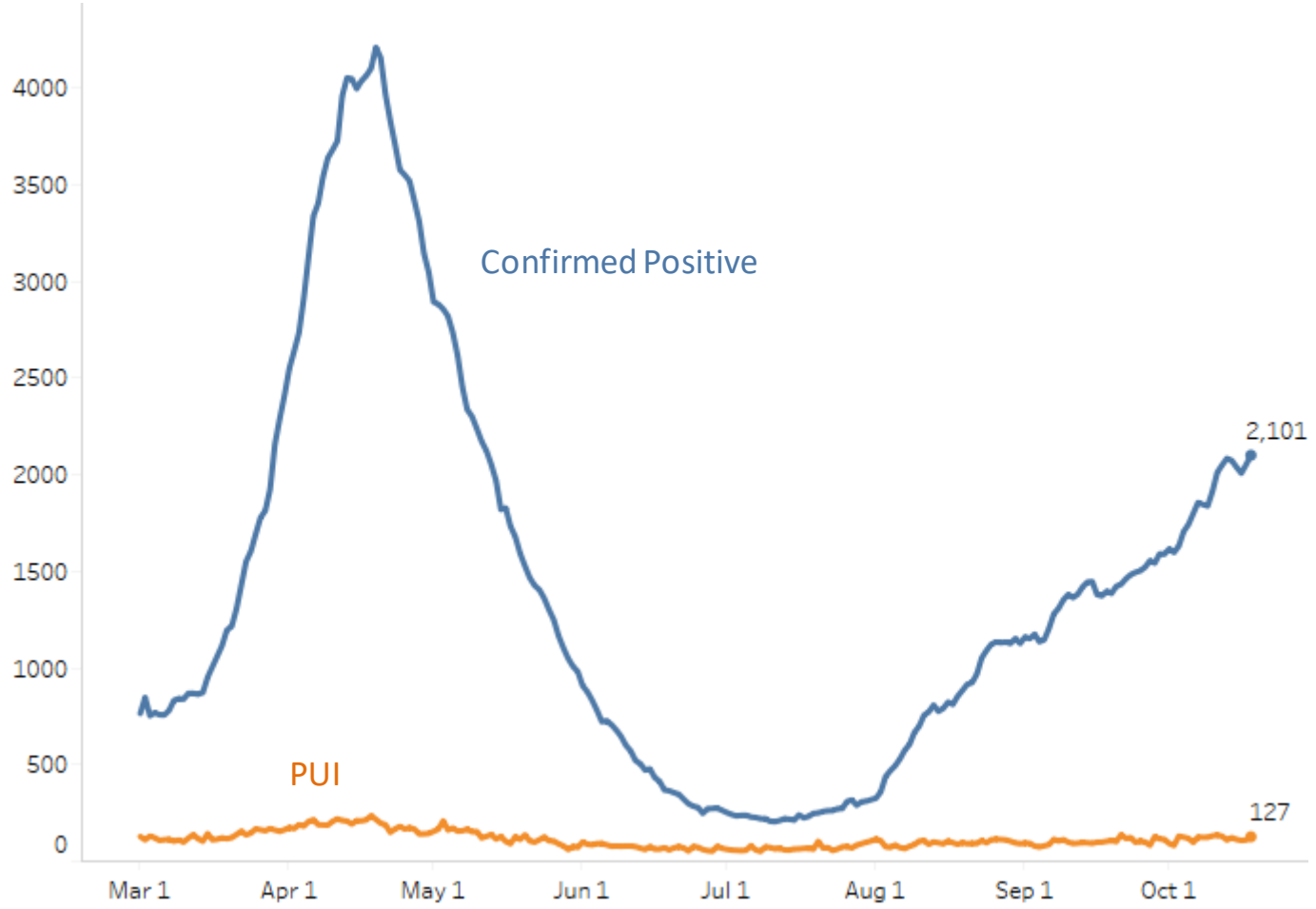


- Overall trends for daily average deaths are increasing for American Indian/Alaskan Natives, Blacks/African American, Whites, Non-Hispanics, and Hispanics
- Currently, American Indian/Alaskan Natives and Whites have the highest death rate (3.3 deaths/million)
- In the past week, Hispanics have seen the largest increase in death rates (+22%)

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

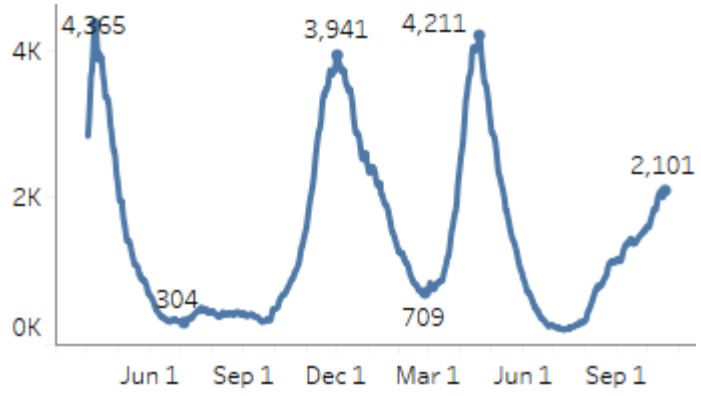
Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 3/1/2021 – 10/18/2021
Confirmed Positive & Persons Under Investigation (PUI)

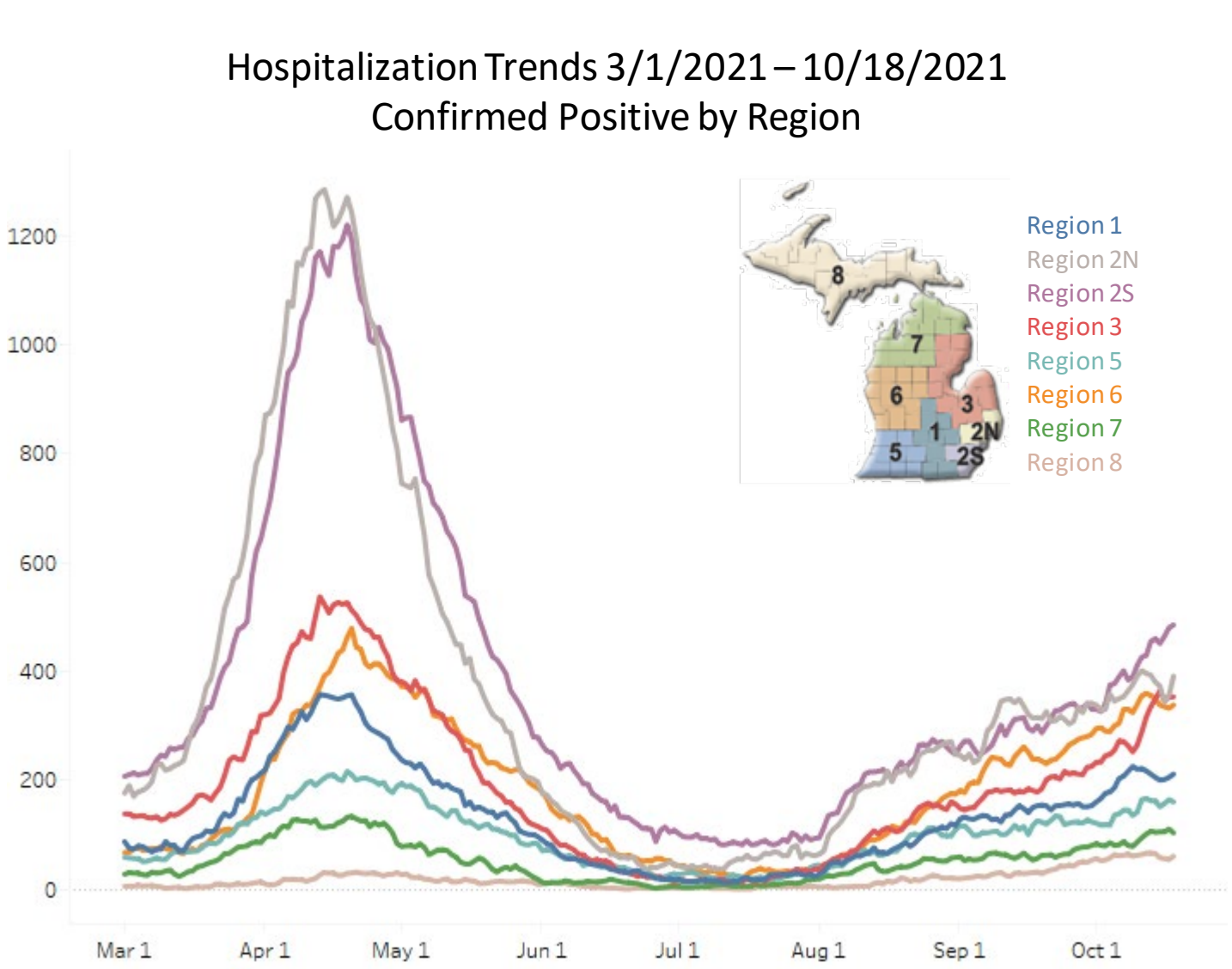


The COVID+ census in hospitals has increased 4% from the previous week (previous week's increase was 18%)

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



Statewide Hospitalization Trends: Regional COVID+ Census



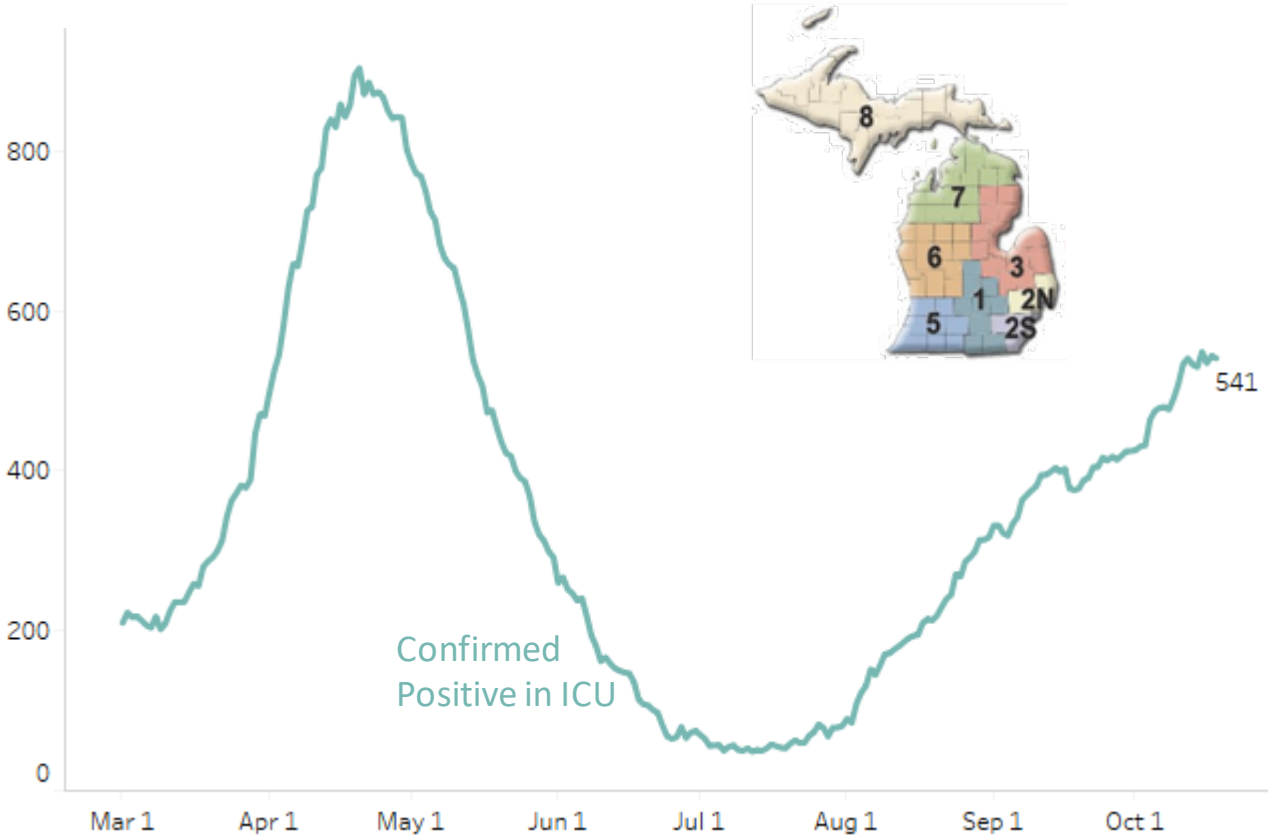
The census of COVID+ patients has increased in 3 regions and decreased slightly in the other regions of the state. Regions 2S and 3 show the largest increases this week.

Regions 3 is over 300/M population hospitalized and Regions 2S, 6 and 7 have greater than 200 hospitalizations/M.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	211 (-5%)	195/M
Region 2N	391 (-2%)	177/M
Region 2S	485 (14%)	218/M
Region 3	353 (23%)	311/M
Region 5	160 (-2%)	168/M
Region 6	338 (-5%)	230/M
Region 7	103 (10%)	206/M
Region 8	60 (-5%)	193/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 3/1/2021 – 10/18/2021
Confirmed Positive in ICUs



Overall, the census of COVID+ patients in ICUs is flat from last week. ICU census in Regions 2S, 3, 5, and 7 has increased from last week.

Regions 1, 2S, and 3 have overall adult ICU occupancy greater than or equal to 85% .

Regions 6 and 7 have >35% of ICU beds occupied with COVID+ patients.

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	54 (-4%)	89%	29%
Region 2N	95 (0%)	72%	17%
Region 2S	123 (6%)	85%	18%
Region 3	82 (4%)	93%	24%
Region 5	36 (9%)	72%	19%
Region 6	81 (-10%)	79%	36%
Region 7	53 (18%)	82%	38%
Region 8	17 (-15%)	65%	27%

Key Messages: Public Health Response

COVID-19 Vaccination

- 3,733 first doses administered each day (7-day rolling average*); total administrations increasing
- Most administered frequently by pharmacies, local health departments, and hospitals
- More than 357,471 third doses administered as of 10/14, may include additional dose or booster dose
- Nearly 5.3 million people (53.0% of the population) in the state are fully vaccinated

Breakthrough

- Less than 1% of people who were fully vaccinated experienced vaccine breakthrough
- Trends over time show that both case and death rates among the Fully Vaccinated are lower than the Not Fully vaccinated rates in Michigan
- Rate of cases and deaths in unvaccinated individuals is much higher (499 vs 85 and 3.0 vs 0.9, respectively) than those who are fully vaccinated

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

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 10/12/21):

- **39,685 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 625 deaths (549 in persons ages 65 years or older)**
  - **1,448 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 vaccine is 100% effective at preventing illness. Some fully vaccinated people will get sick, and some will even be hospitalized or die from COVID-19. However, there is evidence that vaccination may make illness less severe for those who are vaccinated and still get sick. The risk of infection, hospitalization, and death are all much lower in vaccinated people compared to unvaccinated.
- More than 187 million people in the United States have been fully vaccinated as of October 12, 2021. CDC is monitoring these cases among vaccinated persons and evaluating trends in order to better understand who is at risk for severe COVID-19 following vaccine breakthrough infection. Vaccinated people have also experienced asymptomatic infections.
- Current data suggest that COVID-19 vaccines authorized for use in the United States offer protection against most SARS-CoV-2 variants circulating in the United States.

Cumulative COVID-19 Cases by Vaccination Status, Michigan, Jan 15 – Oct 12

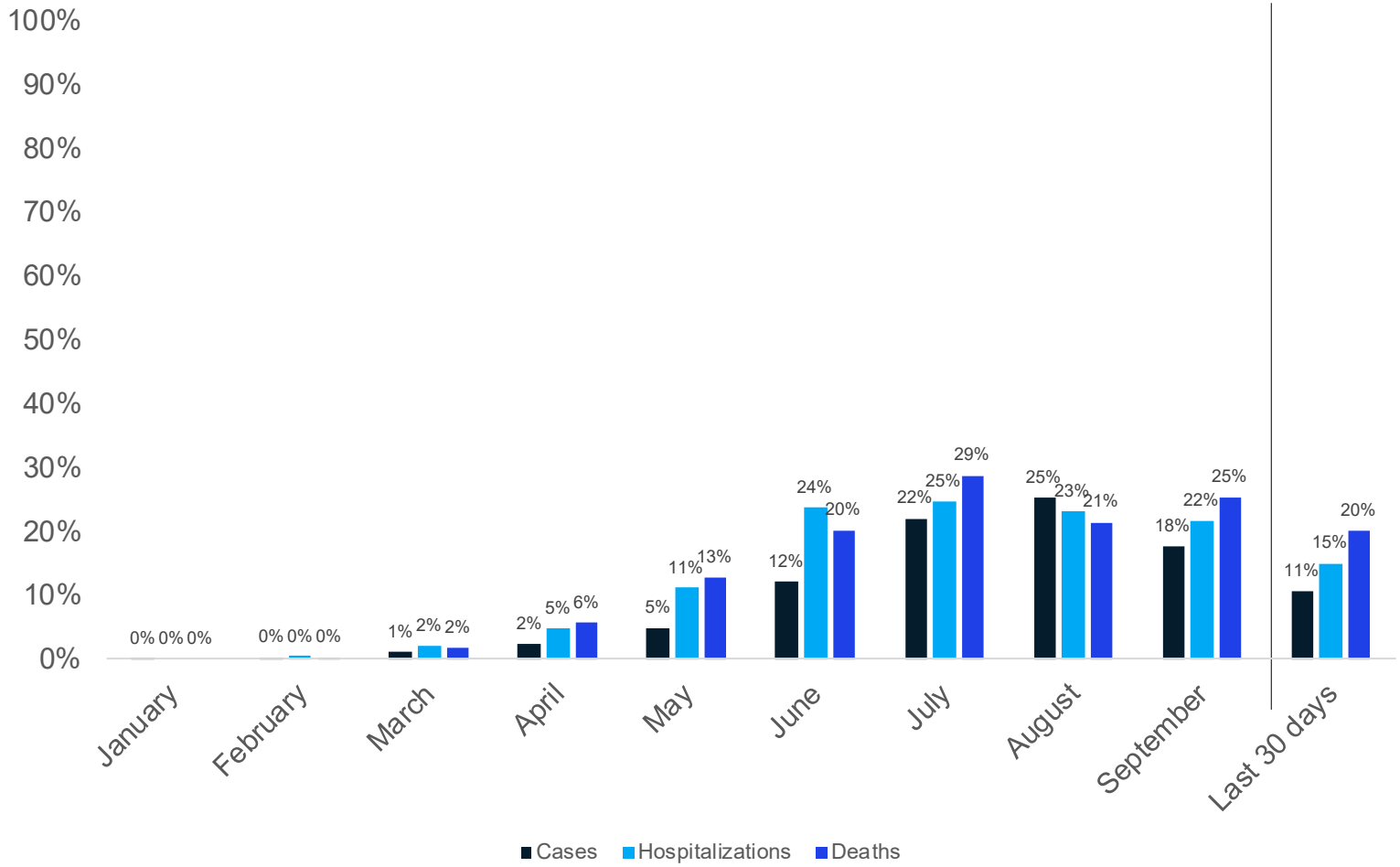
Fully Vaccinated People (4,983,732)		
Cases	**Hospitalization**	**Deaths**
Percent of Cases In People Not Fully Vaccinated (534,171 /573,856) **93.1%**	Percent of Hospitalizations In People Not Fully Vaccinated (14,049 / 15,497) **90.7%**	Percent of Deaths In People Not Fully Vaccinated (5,924 / 6,549) **90.5%**
534,171 Total Cases Not Fully Vaccinated	**14,049** Total Hospitalized Not Fully Vaccinated	**5,924** Total Deaths Not Fully Vaccinated
Total Breakthrough Cases **39,685**	Total Breakthrough Hospitalizations **1,448**	Total Breakthrough Deaths **625**
0.796% Percent of Fully Vaccinated People who Developed COVID-19 (39,685 / 4,983,732)	**0.029%** Percent of Fully Vaccinated People Who Were Hospitalized for COVID-19 (1,448 / 4,983,732)	**0.013%** Percent of Fully Vaccinated People Who Died of COVID-19 (625 / 4,983,732)
6.9% Percent of Cases Who Were Fully Vaccinated (39,685 / 573,856)	**9.3%** Percent of Hospitalizations Who Were Fully Vaccinated (1,448 / 15,497)	**9.5%** Percent of Deaths Who Were Fully Vaccinated (625 / 6,549)
Total Cases: **573,856**	Total Hospitalizations: **15,497**	Total Deaths: **6,549**

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

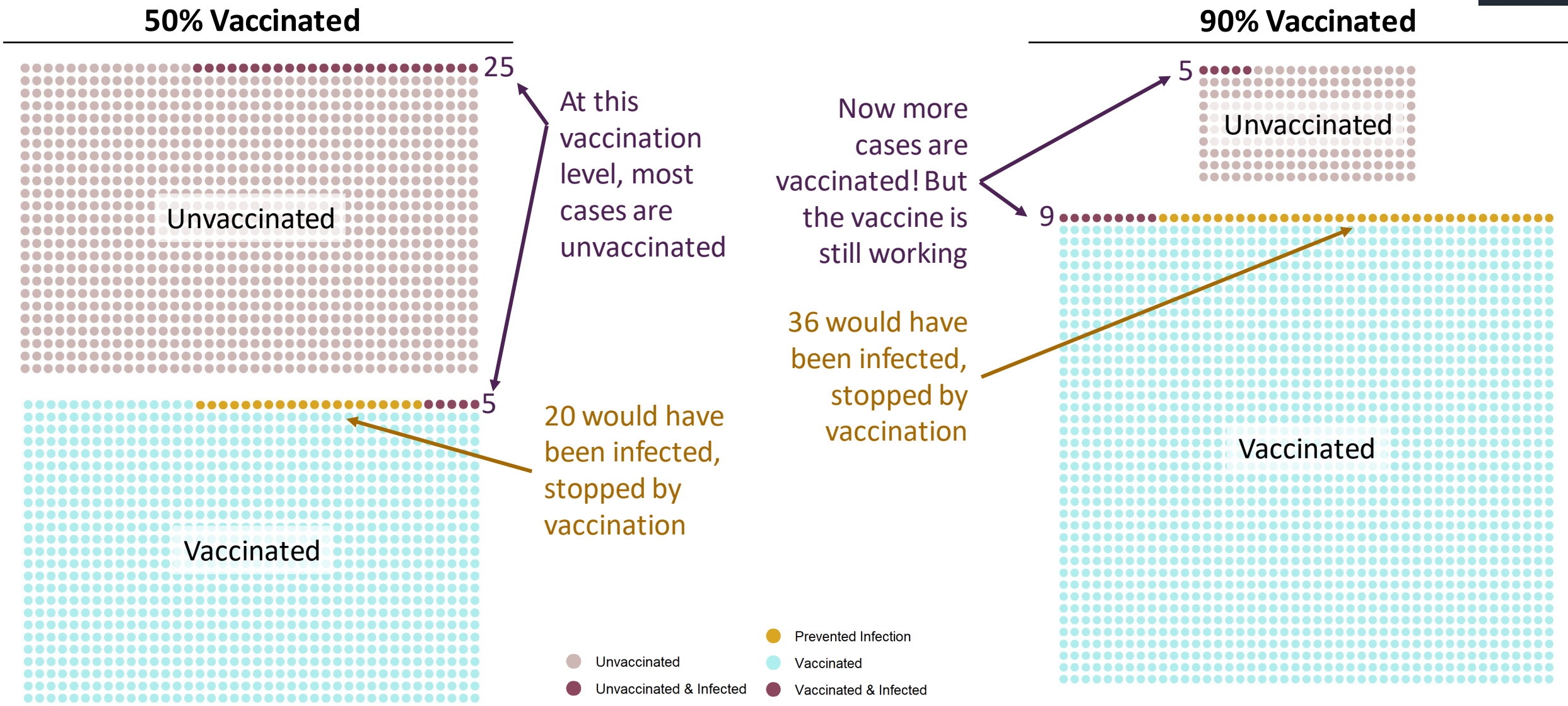
- 53% of the population is fully vaccinated yet only account for ~20-25% of cases, hospitalizations, and deaths in September
- As the fully vaccinated population has increased, so have the percent of breakthrough incidents; but breakthrough burden remains lower

In the last 30 days (Sep 13 – Oct 12), 10,132 (10.6%) of 95,990 cases, 199 (15%) of 1,329 hospitalizations, and 92 (20%) of 460 deaths were among fully vaccinated individuals



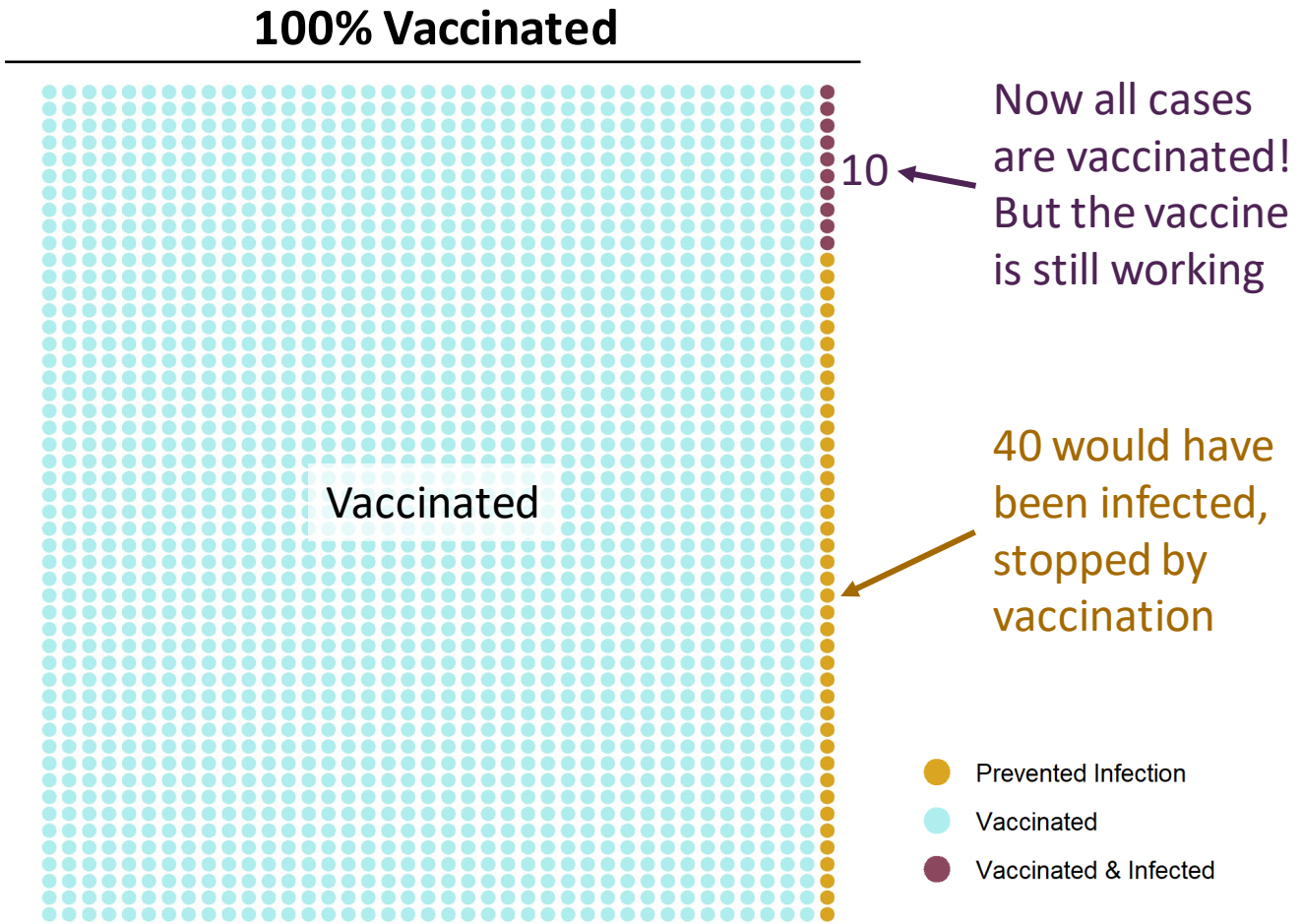
Michigan Disease Surveillance System may underestimate the frequency of COVID-19 hospitalizations:
- Case investigation and follow-up is more difficult for individuals who get vaccinated (e.g., they are too ill to speak to investigators, don't answer their phone, or otherwise).
- These hospitalizations 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.

When more people are vaccinated, more cases will come from the vaccinated population



Both Scenarios: Vaccine reduces disease by 80%, 2.5% infection level, 2000 total people

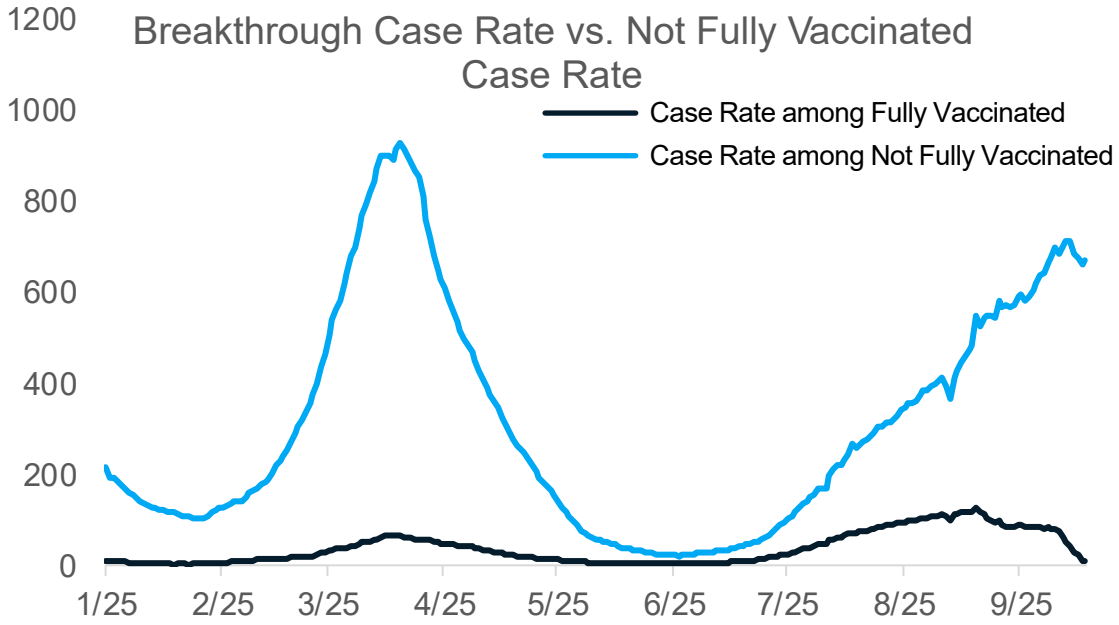
When more people are vaccinated, more cases will come from the vaccinated population

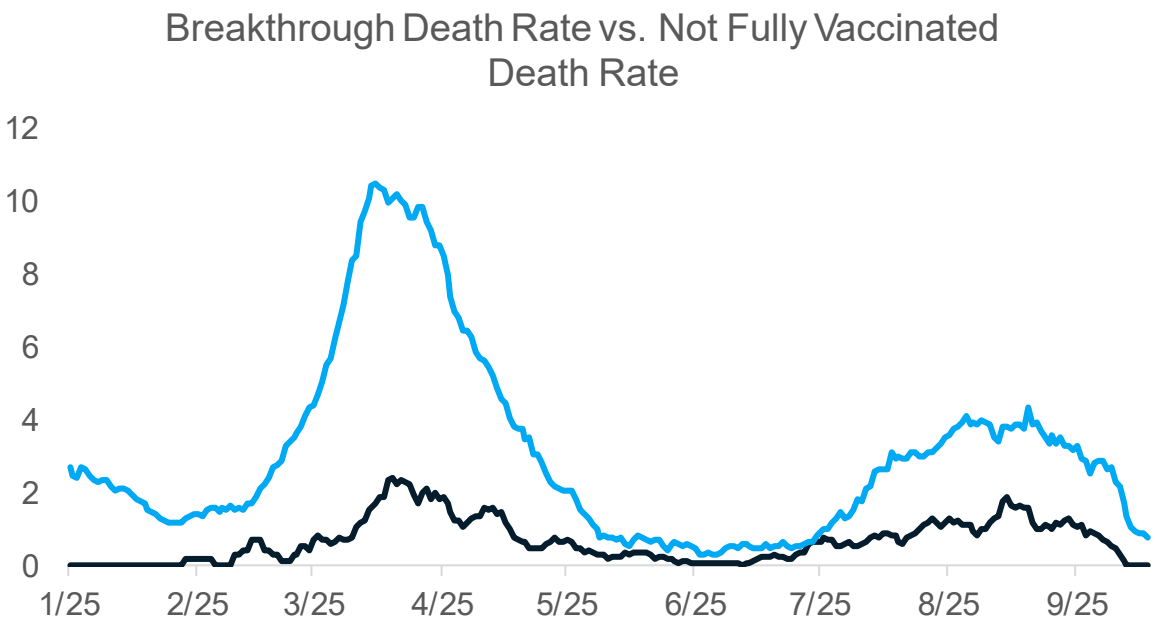


- As vaccine coverage increases, more cases will be vaccinated
- Until at 100% coverage, all cases are vaccinated
- However, the proportion of vaccinated people who get sick is much smaller than the proportion of unvaccinated people who get sick

Scenario setup: Vaccine reduces disease by 80%, 2.5% infection level, 2000 total people

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
- 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

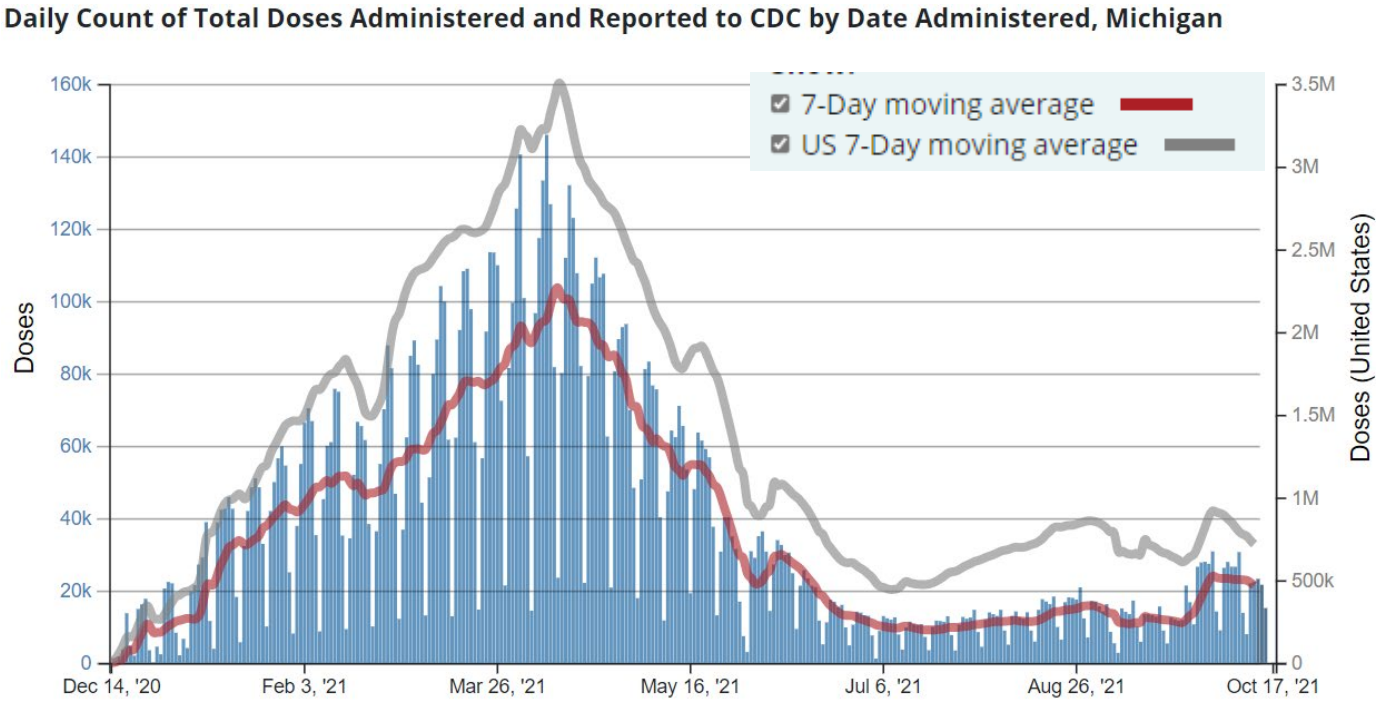
Average daily doses administered declining (data through 10/18/2021)

14,035,320 doses delivered to providers and
11,099,066 doses administered*

MI 7-day rolling average ending October 12th
- 21,403 total doses/day on average† (23,349 on 10/5)
- 3,733 first doses/day on average † (4,200 on 10/5)

Total primary series doses in month of September were most frequently administered¶ by:
Pharmacies (209,095)
LHD (17,244) and hospitals (15,3846)
Family practice (10,733) and FQHCs (8,874)

Third Doses
- 357,471 third doses administered as of 10/18



Source: *CDC COVID Data Tracker > Vaccinations in the US, † CDC COVID Data Tracker > Vaccination Trends; ¶ MCIR COVID-19 Vaccine Dashboard

Nearly 5.3 Million Michiganders fully vaccinated and 53.0% of total population fully vaccinated

Nearly 5.3 million people in the state are fully vaccinated*

84.2% of people aged 65 and older have completed the series (↑0.2%)*

57.5% of total population initiated (↑0.2%)*

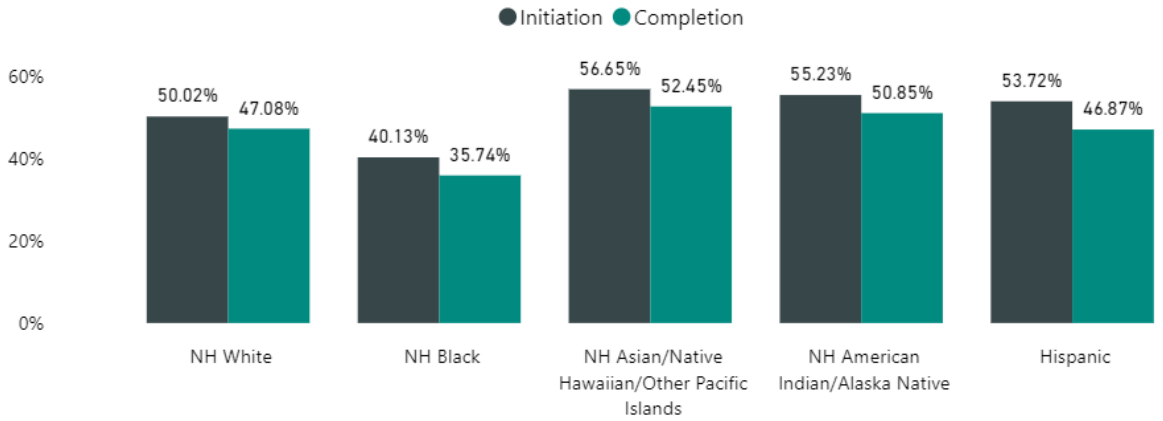
Race/Ethnicity¶ for those 12 years and older:

- Initiation coverage highest among those of Non-Hispanic (NH) Asian, Native Hawaiian or Pacific Islander Race (56.6%), then NH American Indian (55.2%), NH White (50.0%), NH Black or African American Races (40.1%).
- Initiation is at 53.7% for those of Hispanic ethnicity
- Completion follows the same pattern
- 16.2% data missing or unknown

Vaccination Coverage in Michigan as of 10/17/21

Age Group	% At Least One Dose	% Fully Vaccinated	Number Fully Vaccinated
Total Population	57.5%	**53.0%**	5,289,008
≥ 12 years	66.8%	61.5%	5,288,886
≥ 18 years	69.0%	63.6%	4,989,715
≥ 65 years	89.4%	84.2%	1,486,659

Coverage by Race*



*Data suppressed for Race/Ethnicity-by-Age populations smaller than 50 and/or where the number of vaccinated persons is 10 or less.

Source: *CDC COVID Data Tracker > Vaccinations in the US, ¶ MCIR COVID-19 Vaccine Dashboard

Key Messages: Science Round Up

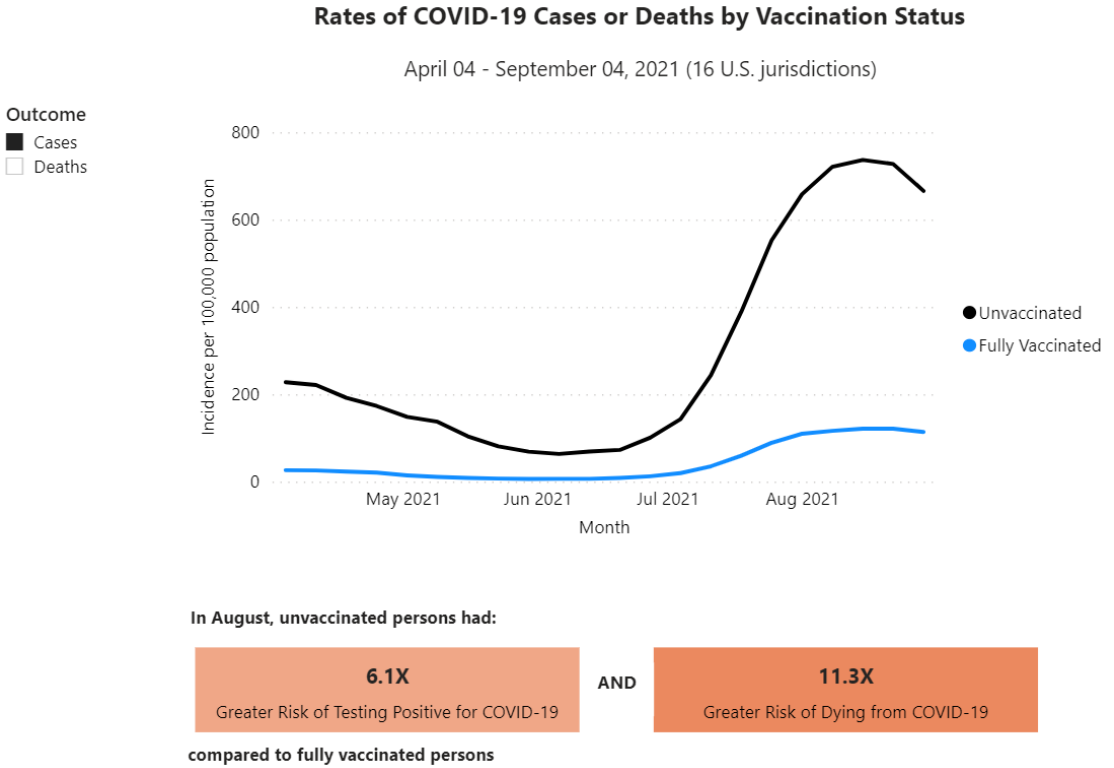
National Dashboards (Updates to CDC COVID Data Tracker)

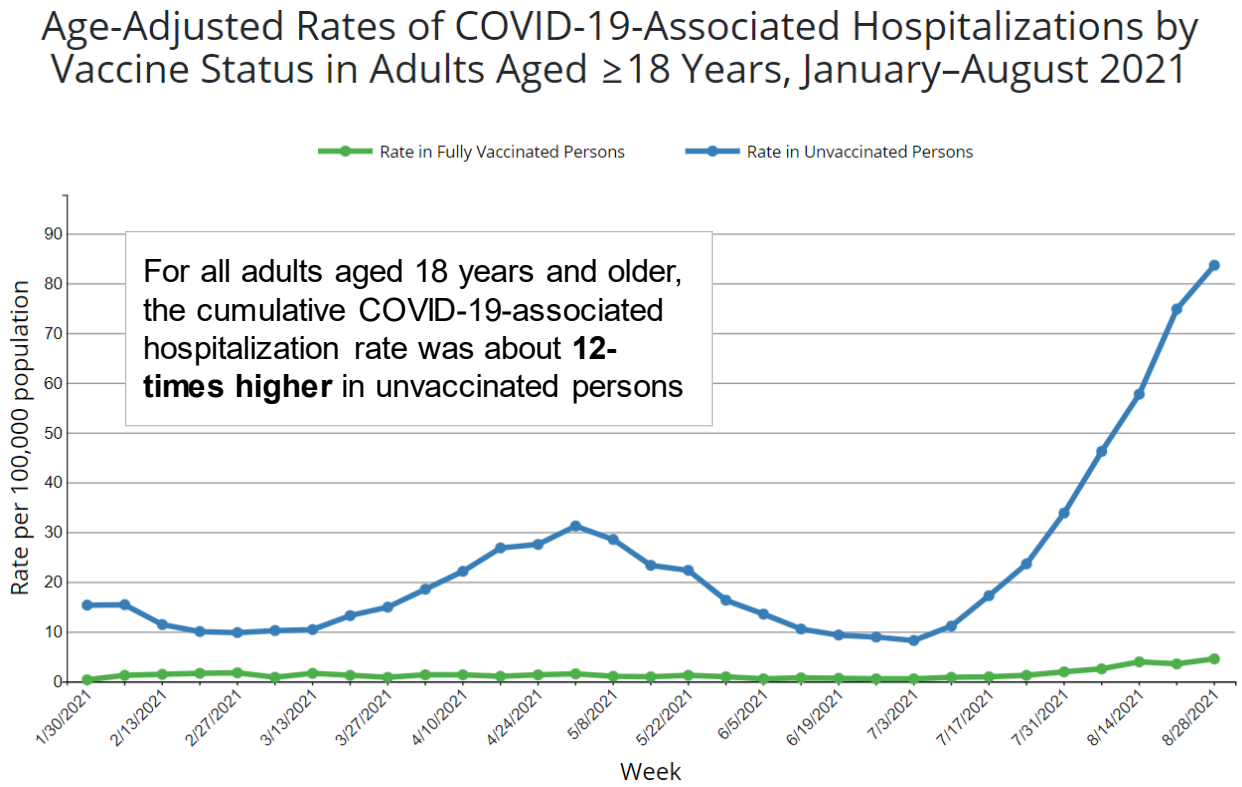
- Getting vaccinated for COVID-19 reduces the risk of getting COVID-19 illness and helps protect from severe illness even when COVID-19 illness occurs
- CDC continues to monitor how well the vaccines are working
- Studies show that COVID-19 vaccines reduce the risk of COVID-19, especially severe illness, among people who are fully vaccinated

- CDC now displays rates of COVID-19 cases or deaths by vaccination status
  - These data can be stratified by vaccine product or age group
- In August, **unvaccinated individuals** had **6.1 times greater risk of testing positive for COVID-19** and **11.3 times greater risk of dying form COVID-19** than for vaccinated individuals

- CDC also displays several figures showing weekly, population-based rates of COVID-19-associated hospitalizations among people who were fully vaccinated and those unvaccinated
- For all adults aged 18 years and older, the cumulative **COVID-19-associated hospitalization rate was about 12-times higher in unvaccinated persons**

COVID-19 National Vaccination Breakthrough Cases, Hospitalizations and Deaths





- These data compare risk of infection, hospitalization, and death for those who are unvaccinated to those fully vaccinated and excludes those partially vaccinated
- Breakthrough cases are those vaccinated persons who had SARS-CoV-2 RNA or antigen detected 14-days after completing their primary vaccine series
- COVID-19-associated deaths occurred among people with documented COVID-19 diagnosis & who died; verified by public health staff reviewing vital records & epi data
- COVID-19-associated hospitalizations are for those 18 and older from the COVIDNET database, a network of 250 acute care hospitals in 14 states, **including Michigan**
- 16 health departments, **including Michigan**, currently submit case, death, and immunization data to CDC and represent 30% of total U.S. population

Source: CDC COVID Data Tracker > Rates of Cases and Deaths; CDC COVID Data Tracker > Hospitalizations by Vaccination Status