MI COVID RESPONSE DATA AND MODELING UPDATE

October 26, 2021

Executive Summary

Special Population Focus: Children

Cases are plateaued compared to last week

There are 487 active outbreaks and clusters in K-12 schools as of 10/21

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

172 Michigan children have been diagnosed with Multisystem Inflammatory Syndrome in Children (MIS-C)

42% (222/533) of school districts in Michigan have a school mask policy

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

Percent positivity (11.4%) increased since last week (11.3% last week) but has decreased from high of 11.5% on 10/16

Case rate (312.8 cases/million) is decreasing for about 1 week (315.7 cases/million prior week)

- Longer backfill times are impacting trend numbers and weekly comparisons for cases by onset date
- In the last 7 days, only 2 states/territories/jurisdictions reported more cases than Michigan (this week rank 56th lowest; 55th last week), and Michigan case rate is 49th lowest (51st 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 (10.5%) is increasing for 14 weeks (up from 10.2 % last week)

- Michigan has 42nd lowest inpatient bed utilization (40th last week) and 41st lowest adult ICU bed utilization (28th last week)

Death rate (4.0 deaths/million) is increasing for three weeks (3.4 last week). There were 280 COVID deaths between Oct 12-Oct 18

- Michigan has the 42nd lowest number of deaths (46th last week), and T22th lowest death rate (T19th last week) in the last 7 days

7-day average **state testing rate** is plateaued around 3,614 tests/million/day. **Daily diagnostic tests (PCR)** is 36.0K per day, and the weekly average for PCR and antigen tests conducted in Michigan is 47.8K.

More than 11.2 million **COVID-19 vaccine** doses administered, 53.3% of the population is fully vaccinated (5.3 million people)

COVID-19 and Pediatric Populations

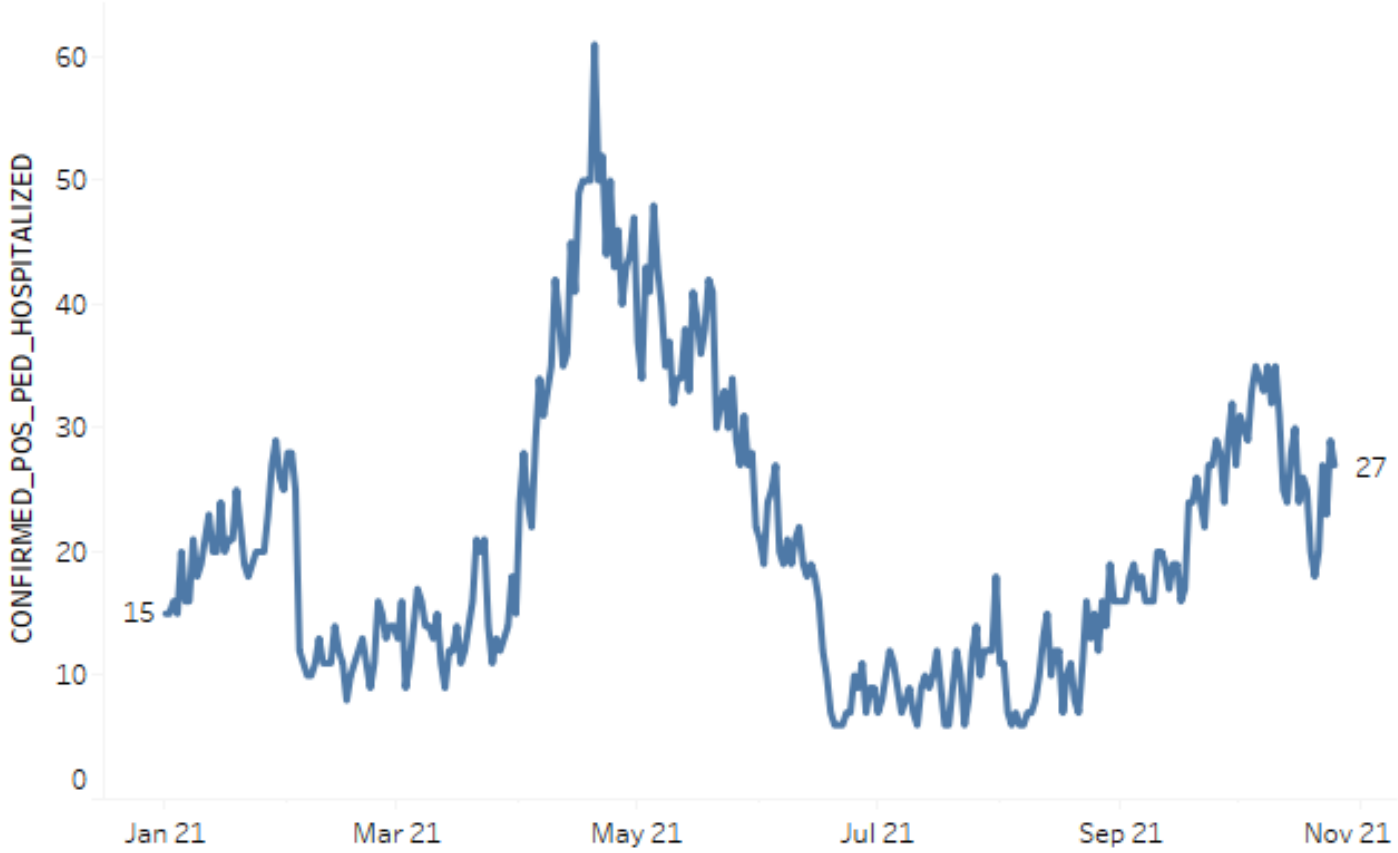
Overview of metrics for individuals < 12 and <18

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	41891	214.0	290.9	11.7	10.3	0	0
Grand Rapids	230120	350652	15396	83.4	362.4	6.6	18.8	0	0
Kalamazoo	140422	214801	7994	41.6	296.2	1.9	8.8	0	0
Saginaw	78759	122834	5209	35.9	455.8	1.3	10.6	0	0
Lansing	78140	119915	4919	24.9	318.7	1.9	15.8	0	0
Traverse City	53099	83462	2545	14.9	280.6	0.0	0.0	0	0
Jackson	41274	64091	2507	15.6	378.0	0.0	0.0	0	0
Upper Peninsula	34645	53875	2680	19.9	574.4	0.1	1.9	0	0
Michigan	1391988	2143877	83236	450.4	323.6	23.4	10.9	0	0

- Each day more than 450 children under age 12 become infected with COVID-19, similar to last week
- Pediatric case rates are plateaued around 323.6 cases/million (last week: 325.7 cases/million)
- Pediatric (<18) hospital census* is averaging approximately 23 per day (last week: 26 per day)

Note: Data as of 10/25; case data 10/18, hospitalization data 10/25. Hospitalization data is for pediatric patients (<18); * includes only confirmed COVID-19

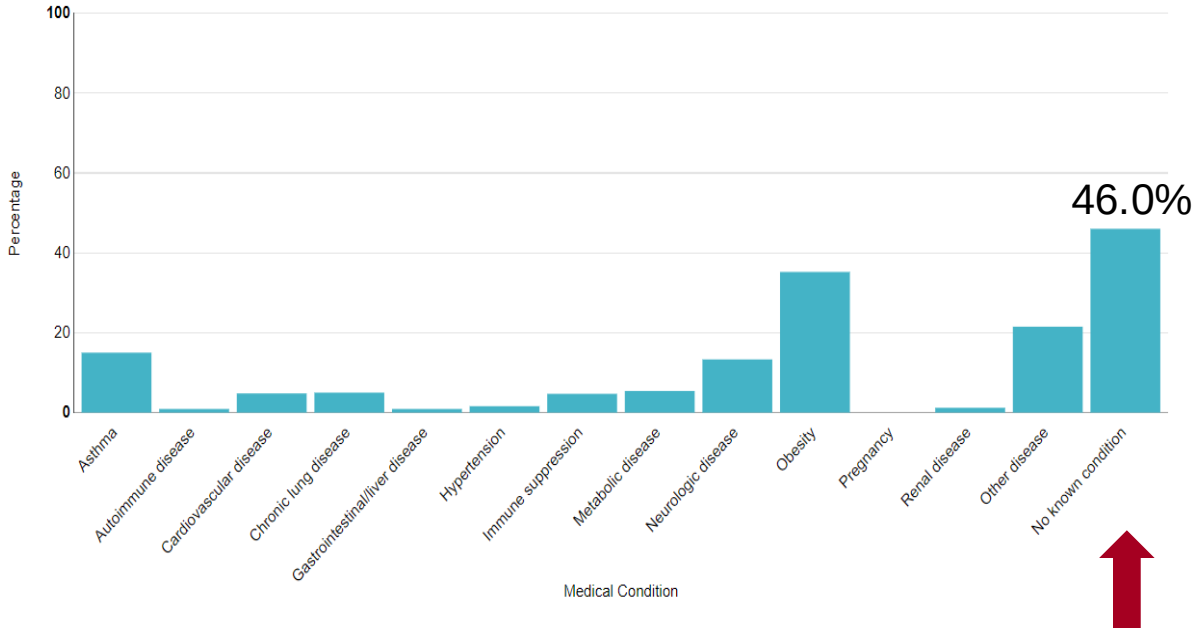
Statewide Hospitalization Trends: Pediatric COVID+ Census



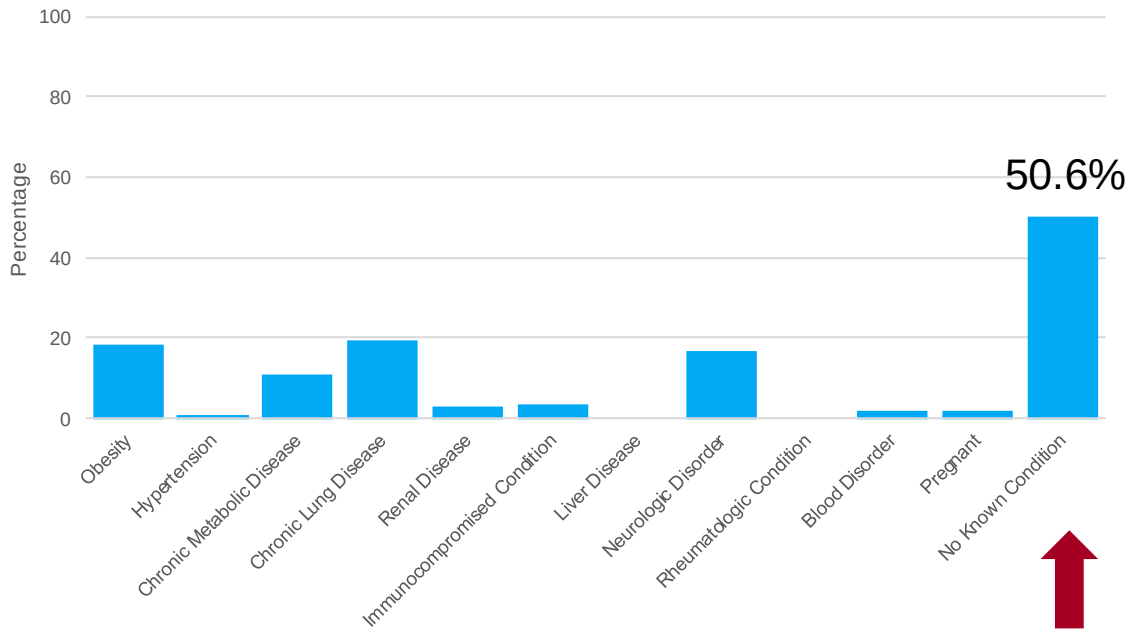
Majority of hospitalized children have no underlying conditions

- 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



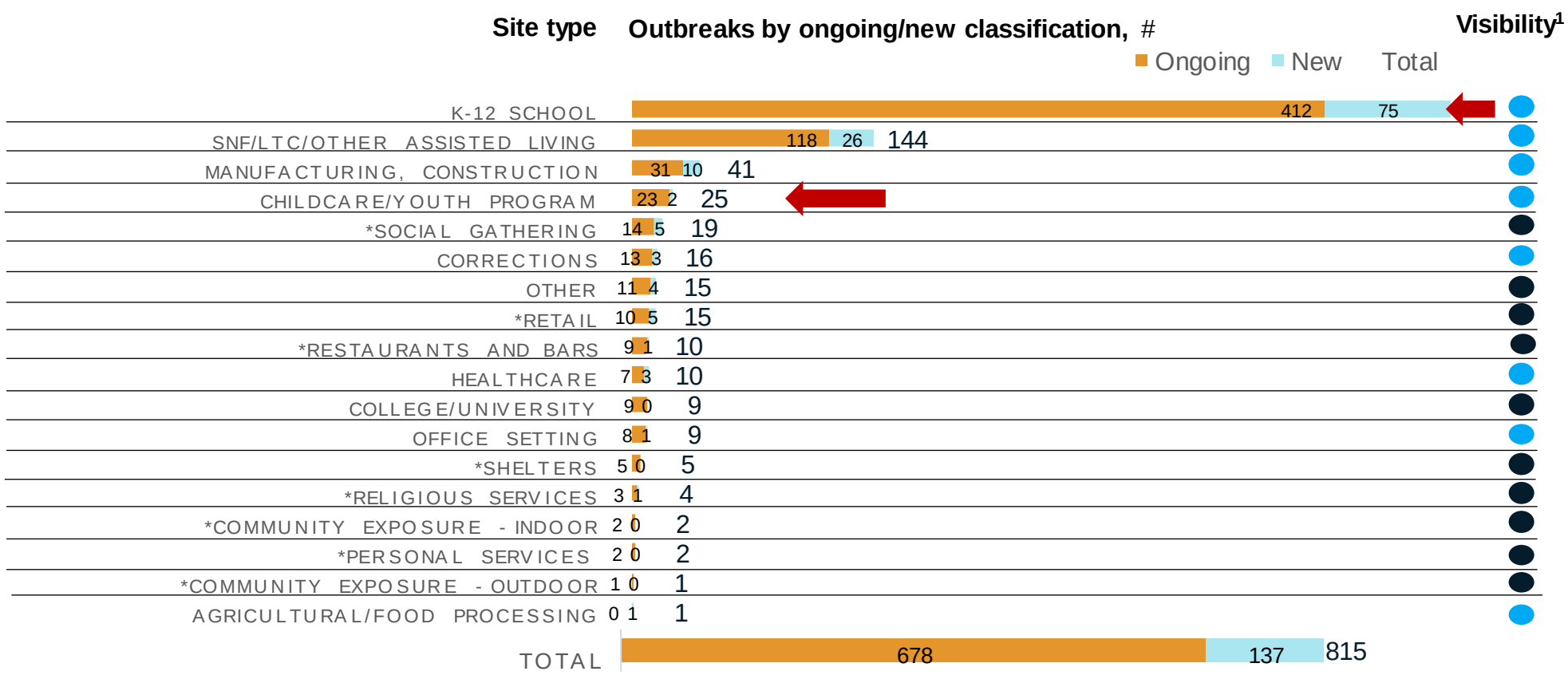
1. COVID-NET hospitalization data are preliminary and subject to change as more data become available. In particular, case counts and rates for recent hospital admissions are subject to delay. As data are received each week, prior case counts and rates are updated accordingly.
2. Data are restricted 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

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 21



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

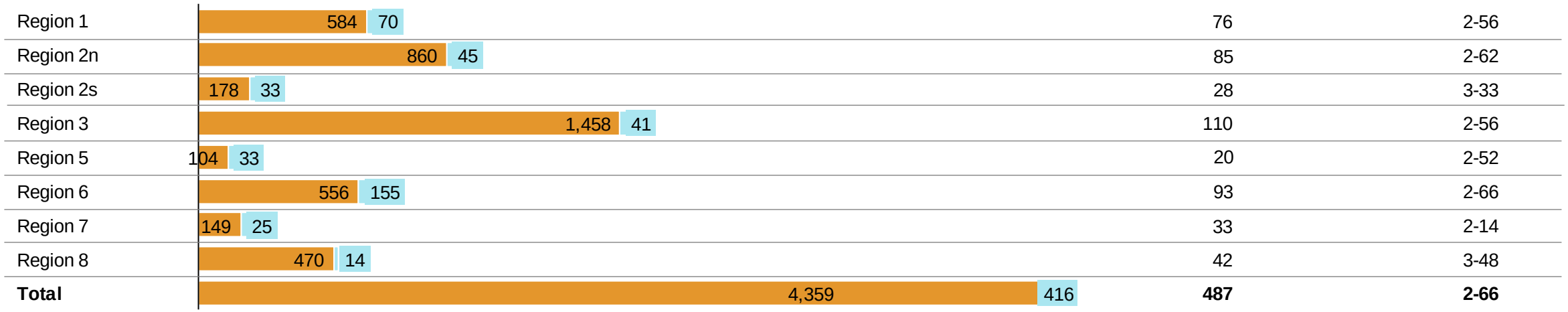
Total number of active outbreaks is **up 5%** from previous week, with 137 new outbreaks identified

K-12 schools reported the greatest number of new outbreaks and clusters (75) this week, although there was a decrease in reported new outbreaks and clusters since last week (↓ 25, ↓25%)

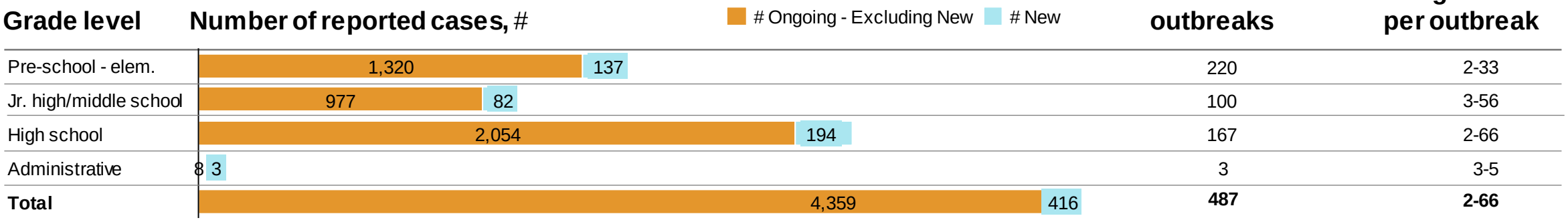
The next greatest number of new outbreaks was among SNF/LTC (26), followed by manufacturing/construction (10), retail (5), social gathering (5), and 8 other settings with at least 1 new outbreak in the last week.

K-12 school clusters and outbreaks, recent and ongoing, week ending Oct 21

Number of reported outbreaks/clusters increased since last week (408 to 487), including in High Schools (138 to 167), Middle/Jr High (85 to 100), and Pre K-Elementary (182 to 220). Administration (3) remained the same since last week.



Region	Number of reported cases, #		Number of outbreaks	Range of cases per outbreak
Region 1	584	70	76	2-56
Region 2n	860	45	85	2-62
Region 2s	178	33	28	3-33
Region 3	1,458	41	110	2-56
Region 5	104	33	20	2-52
Region 6	556	155	93	2-66
Region 7	149	25	33	2-14
Region 8	470	14	42	3-48
Total	4,359	416	**487**	**2-66**



Grade level	Number of reported cases, #		Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	1,320	137	220	2-33
Jr. high/middle school	977	82	100	3-56
High school	2,054	194	167	2-66
Administrative	8	3	3	3-5
Total	4,359	416	**487**	**2-66**

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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.

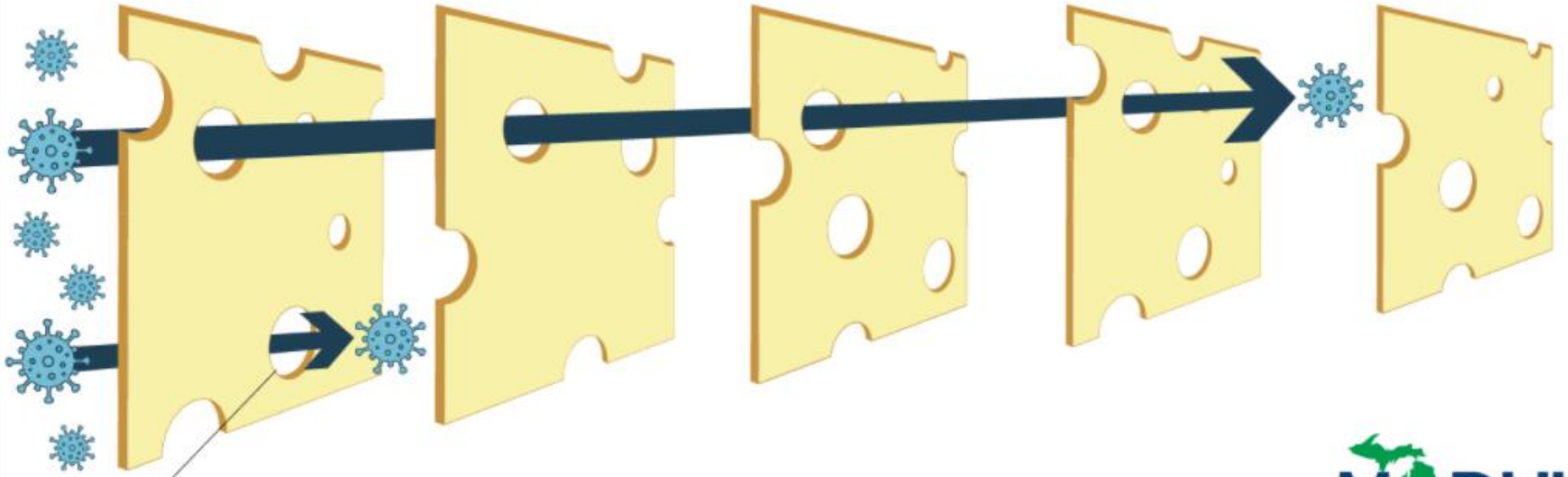
Promote **vaccination** against COVID-19 for eligible staff and students

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: Updates coming soon

Advisory Committee on Immunization Practice (ACIP)

Meeting November 2nd and 3rd

Expected day of/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*

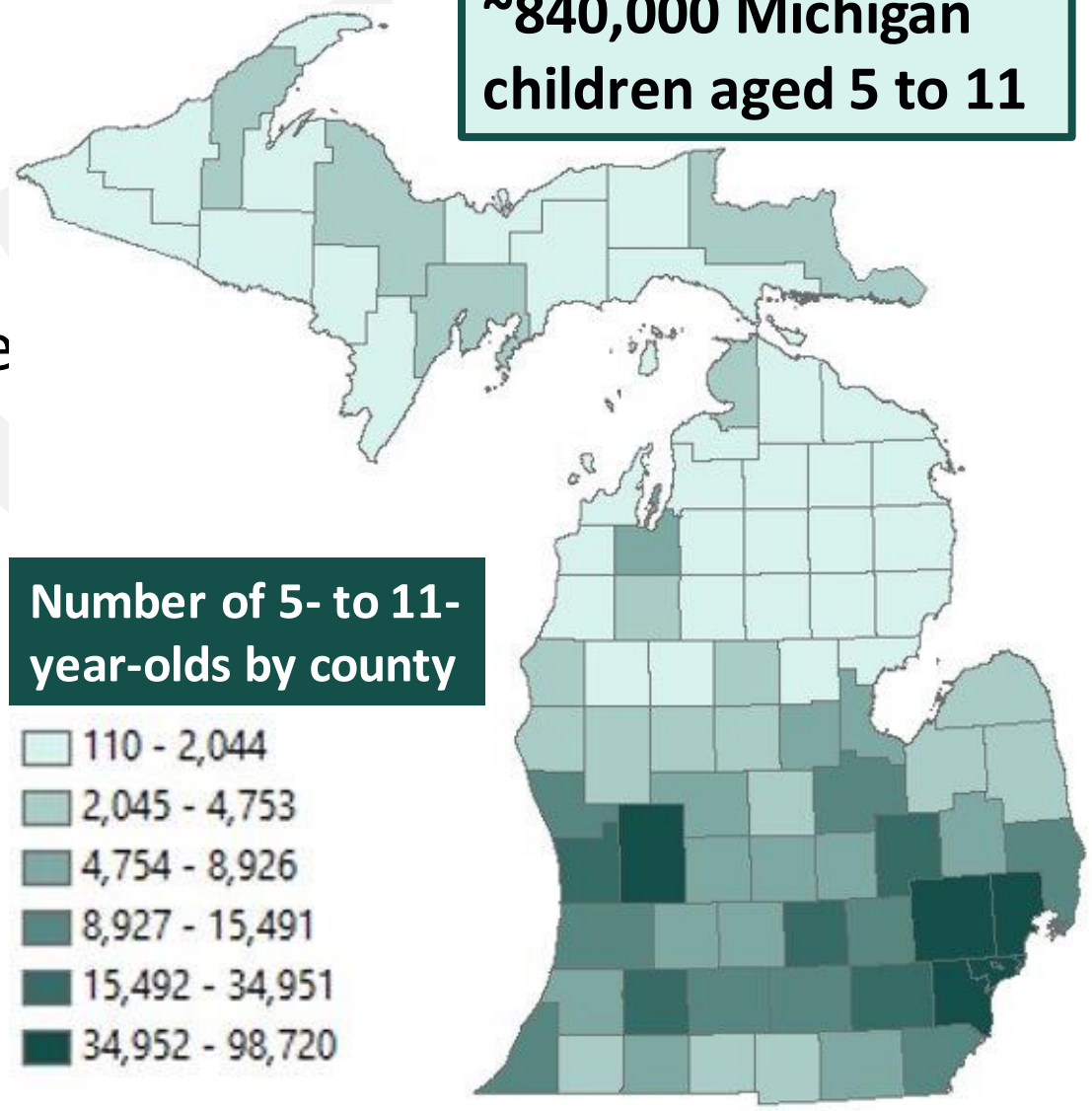
Full Series expected to be two doses three weeks apart

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 vaccines!</u>**

~840,000 Michigan children aged 5 to 11

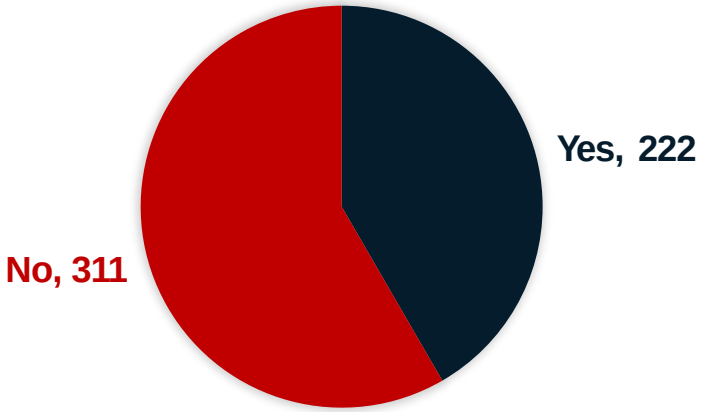


MI School Districts and Mask Policy as of Oct 25, 2021

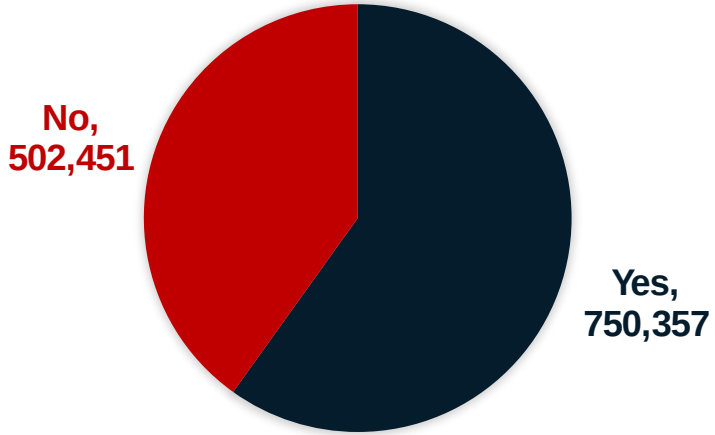
Yes – Any masking policy in some subset of school grades

No – No mask policies (includes unknown)

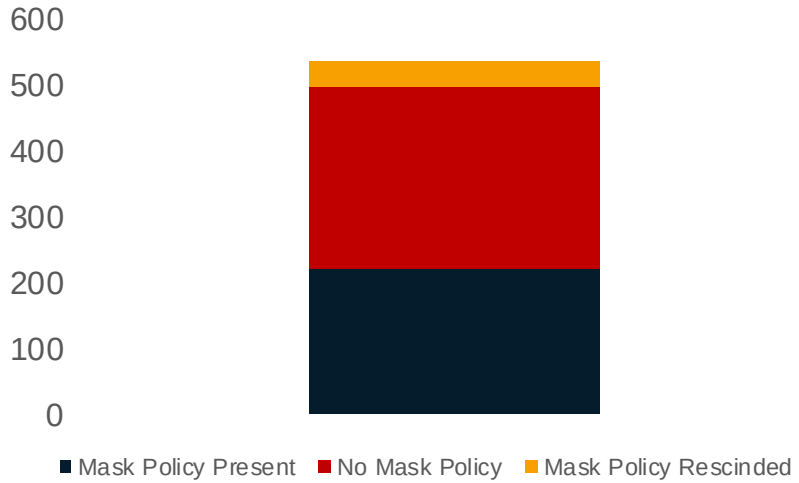
NUMBER OF SCHOOL DISTRICTS WITH MASK POLICIES IN K-12 SETTINGS



NUMBER OF STUDENTS* IN SCHOOL DISTRICTS WITH MASK POLICIES



NUMBER OF SCHOOL DISTRICTS WITH MASK POLICY REVERSAL

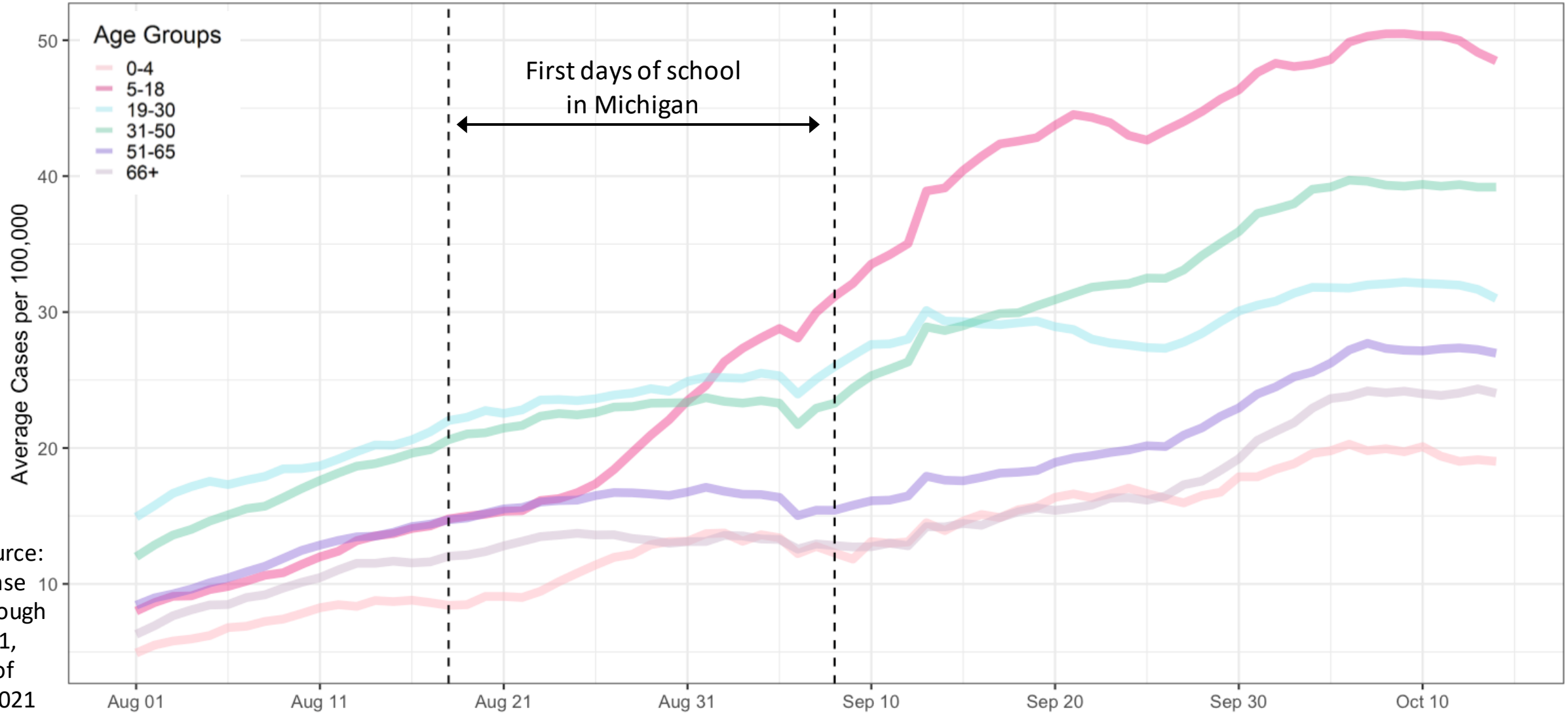


- 42% (222/533) of K-12 school districts have mandatory mask policies
- School districts with mandatory mask policies cover 60% (750,357/1,252,808) of K-12 students*
- Not all K-12 grades or students may be covered by masks polices; examples include policies for those through K-6, or only during higher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

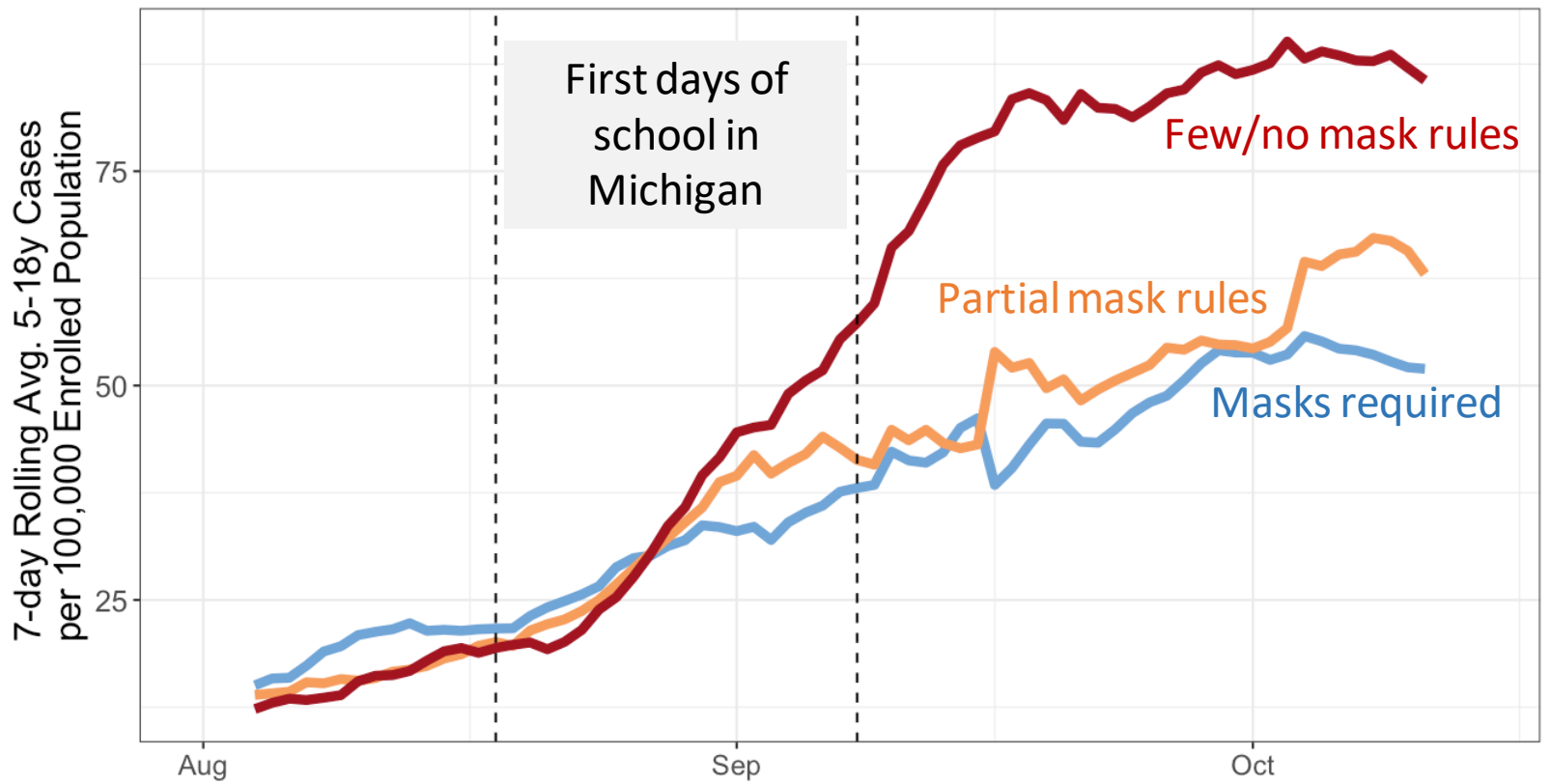
Case increases are largest in school aged children (5-18 year-olds), followed by 31-50 year-olds

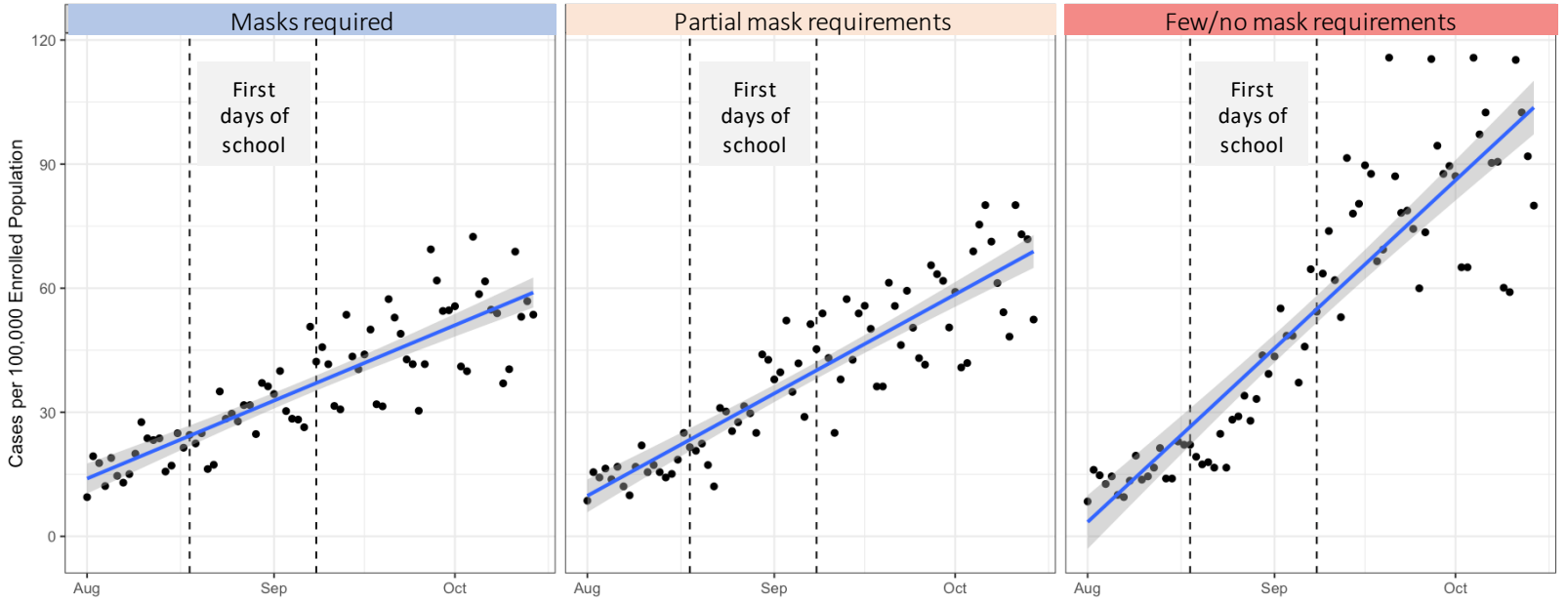


Data source: MDSS case data through 10/14/21, data as of 10/21/2021

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





PUBLIC HEALTH

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 as of 10/21/21 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, 244,034,988 cases and 4,954,274 deaths (Data* through 10/25/21)

- Countries with the highest case count are U.S. (45,544,970), India (34,189,774), and Brazil (21,735,560)

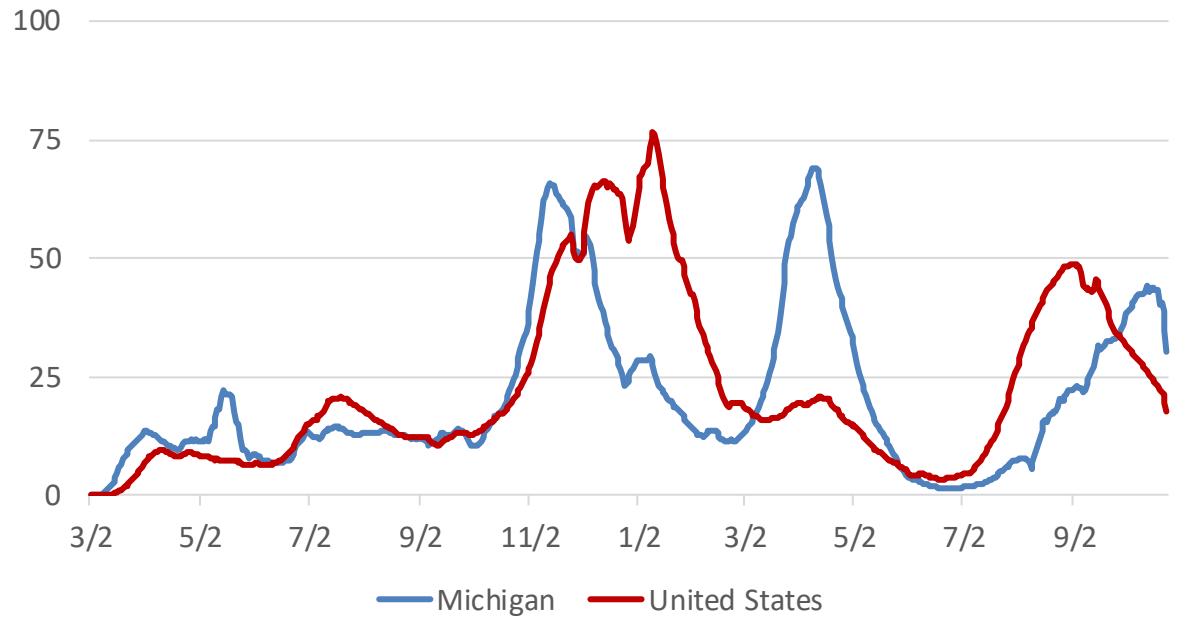
United States: Nearly all US jurisdictions have High or Substantial community transmission¶

- The U.S. is at high transmission level (124.7 cases/100,000 in last 7 days) with 52 states/territories in substantial or high transmission
- Nationally, the 7-day moving average of daily new cases decreased 15.1% compared with previous 7-day moving average
- Percent positivity has decreased from the previous week, now at 5.2%. The number of PCR tests performed has decreased.
- ***Michigan case rates are currently higher than U.S. rate***

Midwest states maintain High transmission levels†

- Overall decline in Region 5 including now Michigan

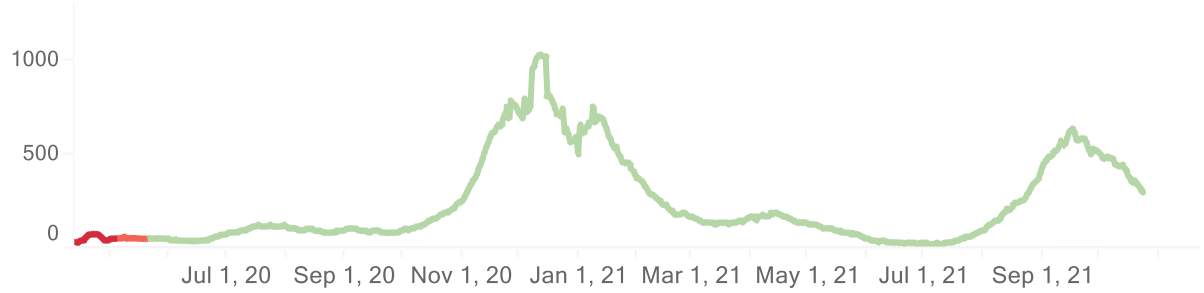
National and Michigan 7-day average New Cases per 100K†



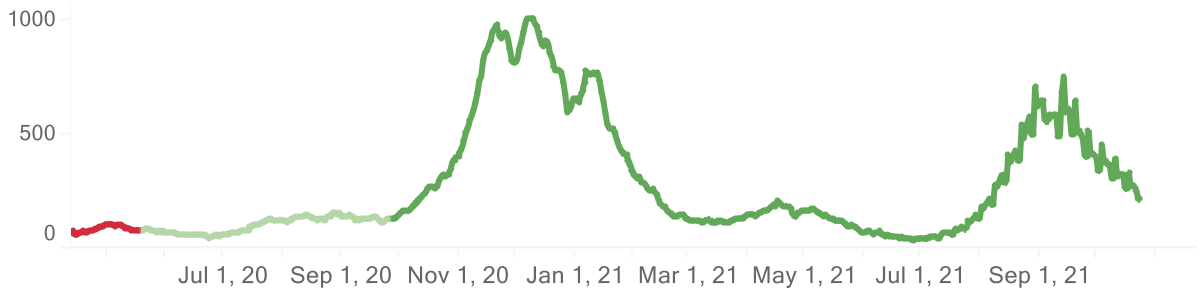
Source: * Johns Hopkins Coronavirus Resource Center; ¶ CDC COVID Data Tracker Weekly Review; † CDC COVID Data Tracker

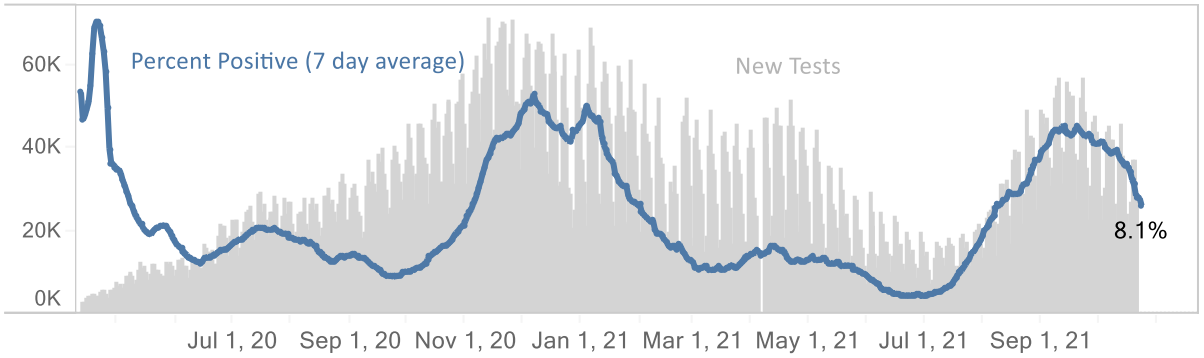
State Comparison: Ohio and Indiana

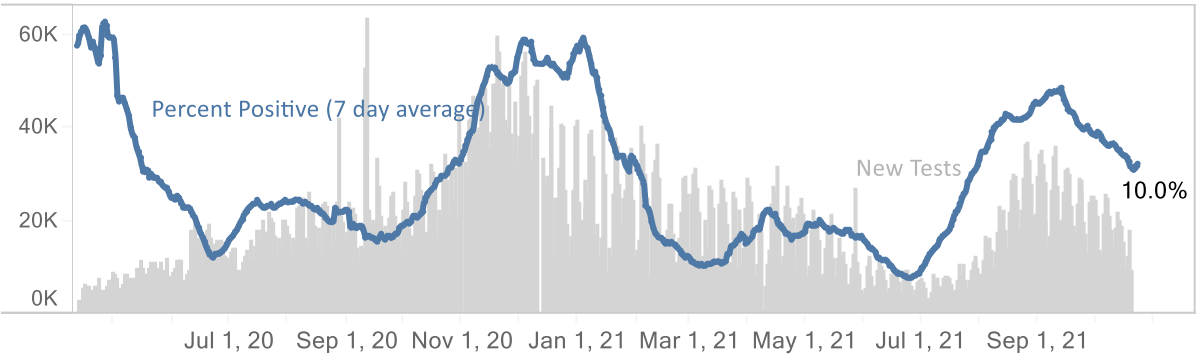
Ohio Confirmed New Cases / 1M (7 days average)

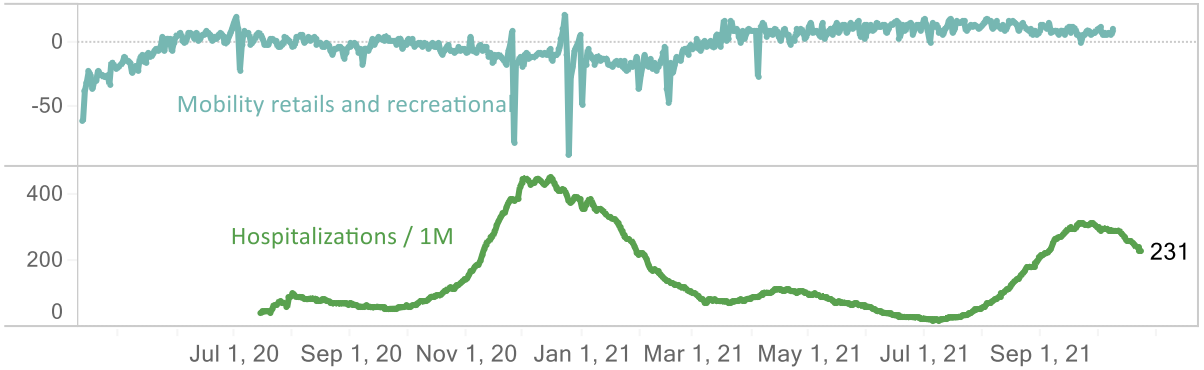


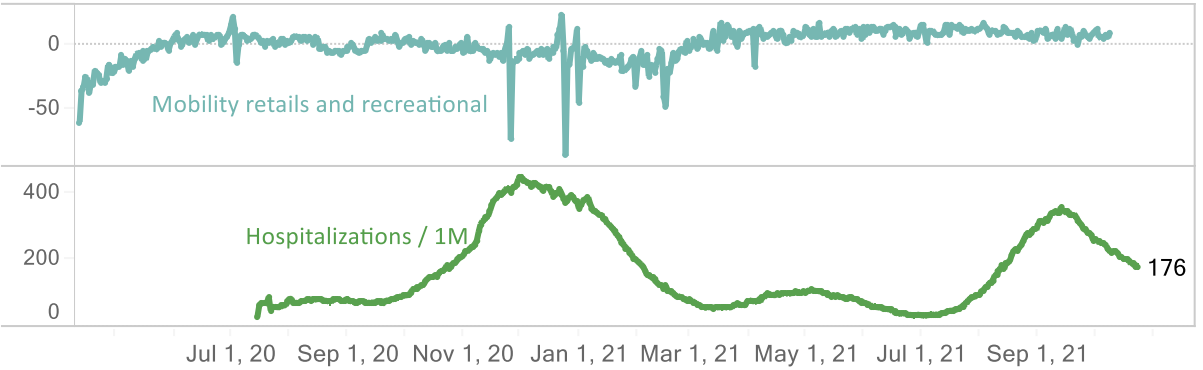
Indiana Confirmed New Cases / 1M (7 days average)



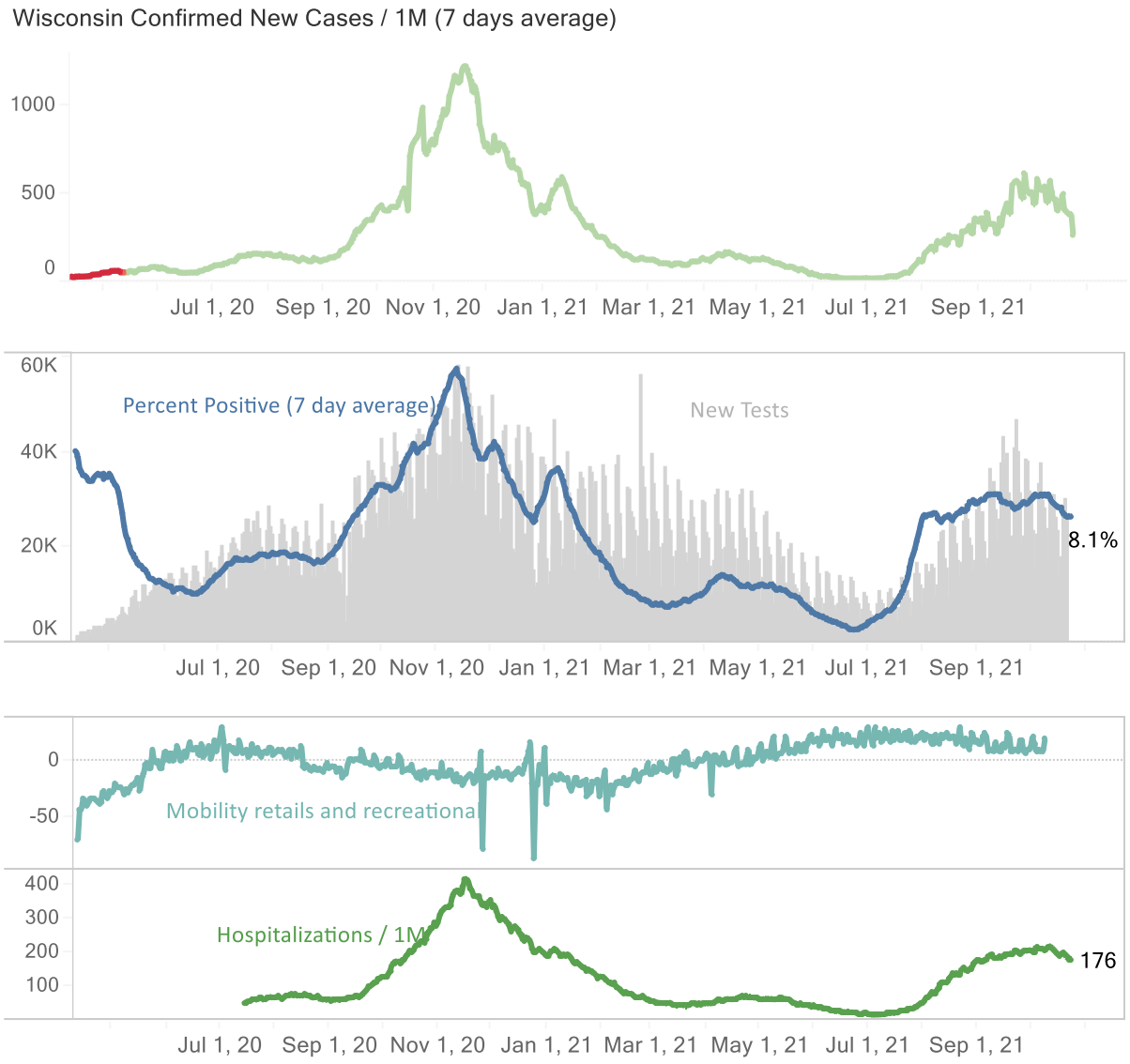


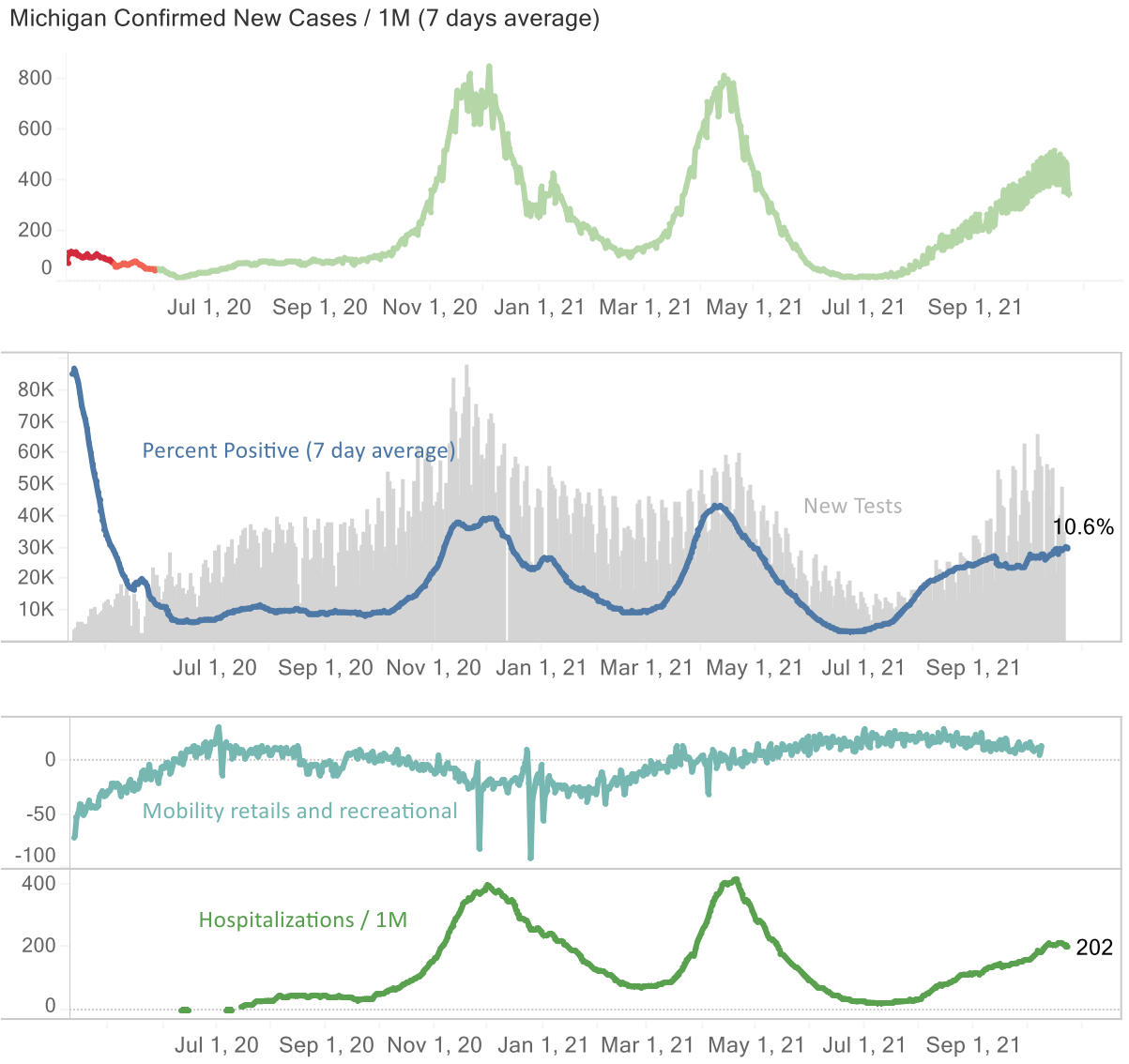




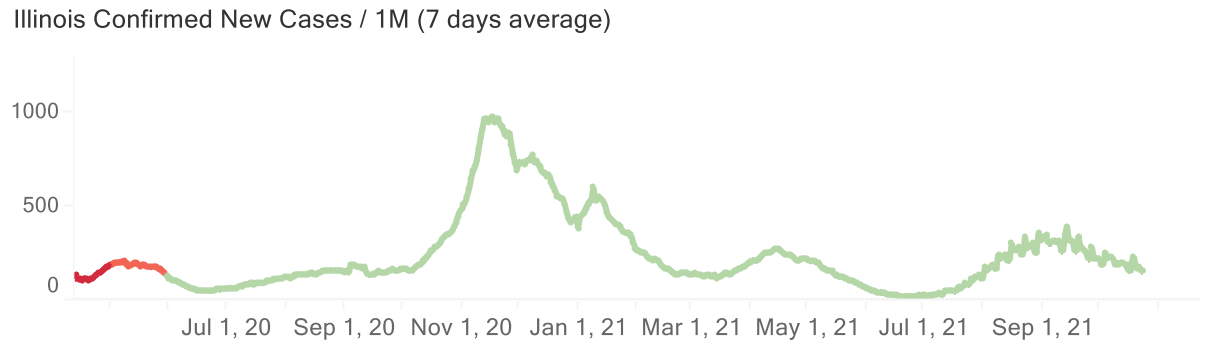


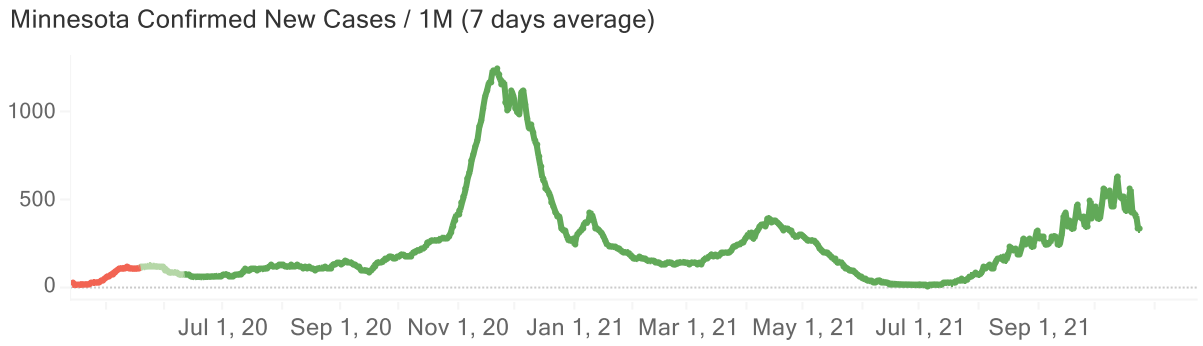
State Comparison: Wisconsin and Michigan

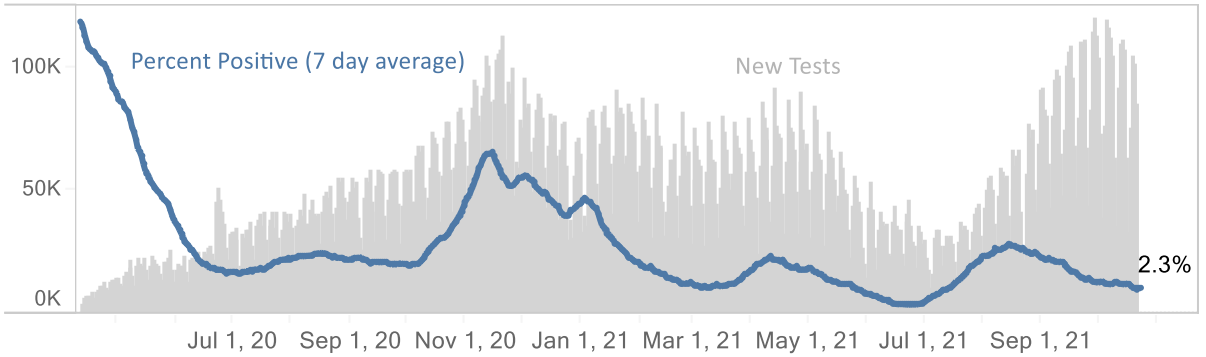


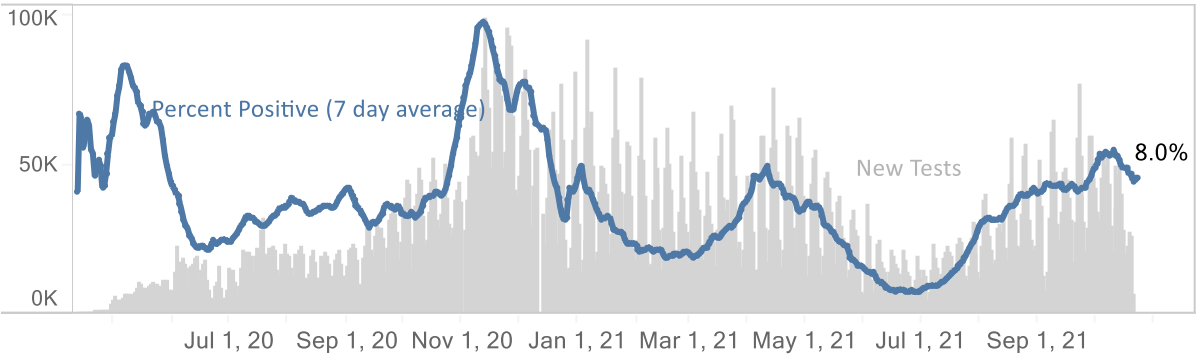


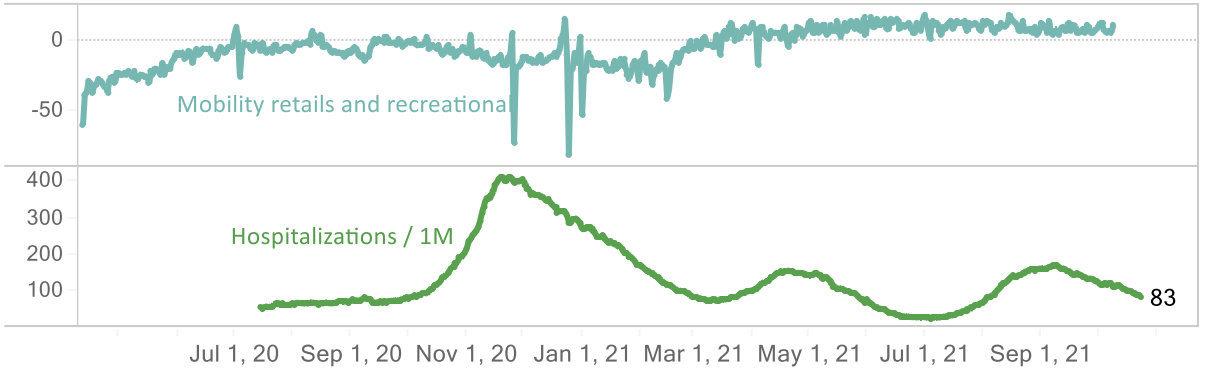
State Comparison: Illinois and Minnesota

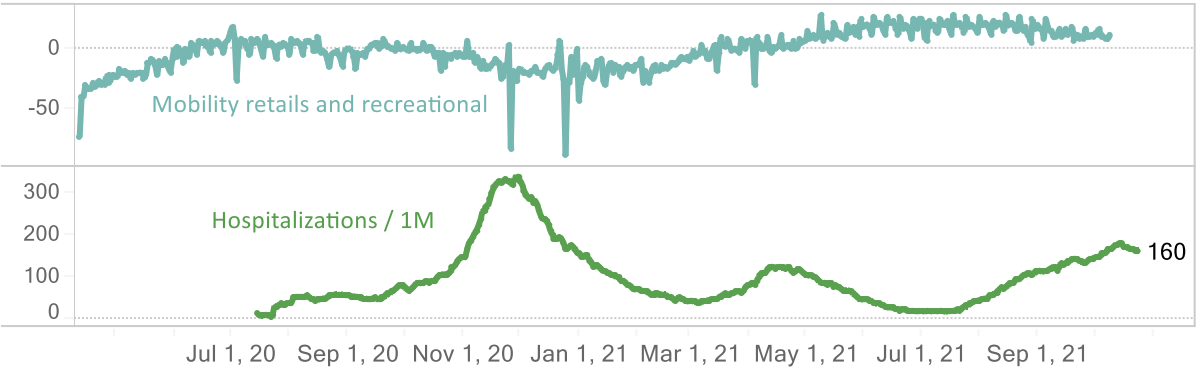












Key Messages: COVID-19 Some Transmission Metrics Shift to Declines

Statewide positivity is 11.4% (last week: 11.3%)

- This is a 1% increase in the past week (prior week: 1% increase) but a decrease since the peak on Oct 16 (11.5%)
- Positivity is now decreasing in most MERC regions
- Positivity in four regions is above 15%

Case rate has decreased to 312.8 cases/million (last week: 315.7 cases/million)

- Longer backfill times are impacting trend numbers and weekly comparisons for cases by onset date
- Decreasing now for about 1 week
- Cases per million are declining in all MERC regions
- Cases per million are declining among all age groups
- 10-19-years-olds are experiencing the greatest case burden (584 daily cases; 465.0 cases/mil)

Michigan is at High Transmission level

- All counties in Michigan are at high transmission level
- CDC recommends all individuals, regardless of vaccination status, should mask indoors

Number of active outbreaks is up 5% from last week

- 137 new outbreaks were identified in the past week, which is down from 190 new outbreaks reported last week
- K-12 reported the most total outbreaks and clusters (487) and new outbreaks (75) this week

Confirmed and probable case indicators

Table Date: 10/25/2021 (7 days from date table was produced: 10/18/2021)

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	254.8	decline [11 days]	8.3	Decrease - 1wk	3898.4	8.6	Increase - 14wk	3.2	Increase - 5wk
Grand Rapids	High	390.5	decline [12 days]	16.6	Decrease - 1wk	3594.5	14.1	Decrease - 1wk	5.3	Increase - 1wk
Kalamazoo	High	296.8	decline [14 days]	13.3	Decrease - 1wk	2882.6	11.7	Increase - 3wk	3.6	Increase - 2wk
Saginaw	High	464.7	decline [11 days]	17.2	Decrease - 1wk	3048.0	12.7	Increase - 5wk	6.8	Decrease - 2wk
Lansing	High	306.6	decline [12 days]	12.1	Decrease - 1wk	2762.7	14.0	Increase - 15wk	4.4	<20 wkly deaths
Traverse City	High	390.8	decline [11 days]	15.9	Decrease - 1wk	2579.1	12.6	Increase - 5wk	5.5	<20 wkly deaths
Jackson	High	412.2	decline [8 days]	17.7	Increase - 17wk	3299.4	20.1	Decrease - 1wk	2.8	<20 wkly deaths
Upper Peninsula	High	472.1	decline [17 days]	12.8	Decrease - 2wk	2985.0	9.8	Decrease - 1wk	6.6	<20 wkly deaths
Michigan	High	312.8	decline [11 days]	11.4	Decrease - 1wk	3614.2	10.5	Increase - 14wk	4.0	Increase - 3wk

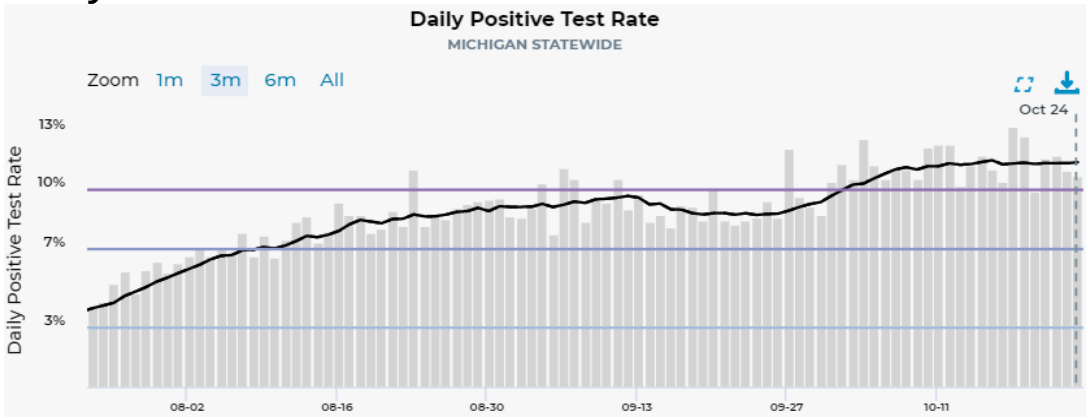
Cases: Low: <7 | A: 7-20 | B: 20-40 | C: 40-70 | D: 70-150 | E: >=150

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

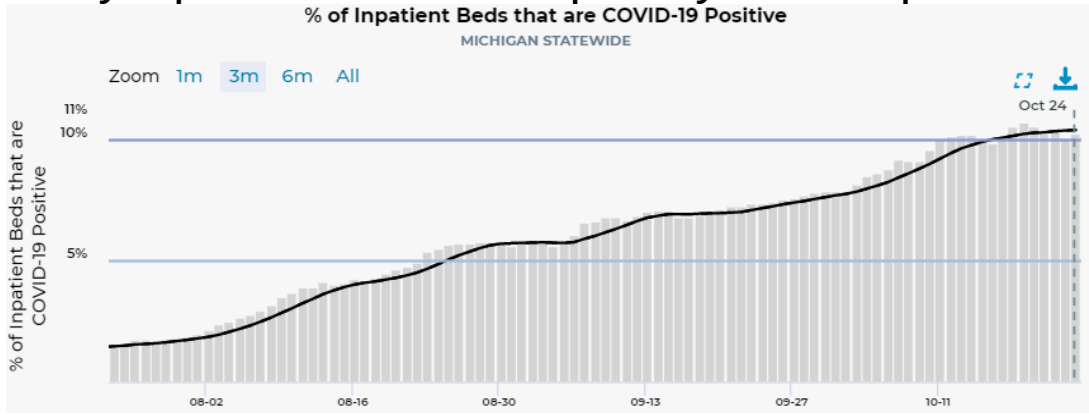
Time Trends – Positivity, Case Rates, Hospitalizations, Deaths

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

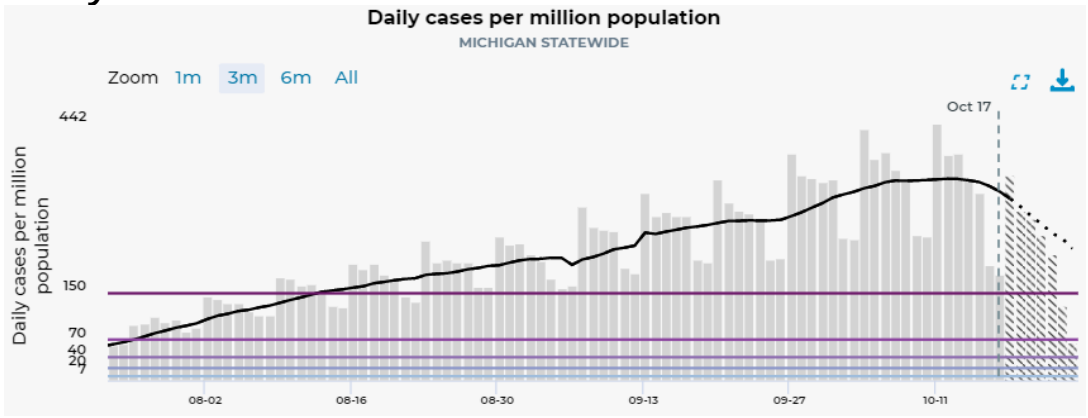
Daily Positive Test Rate



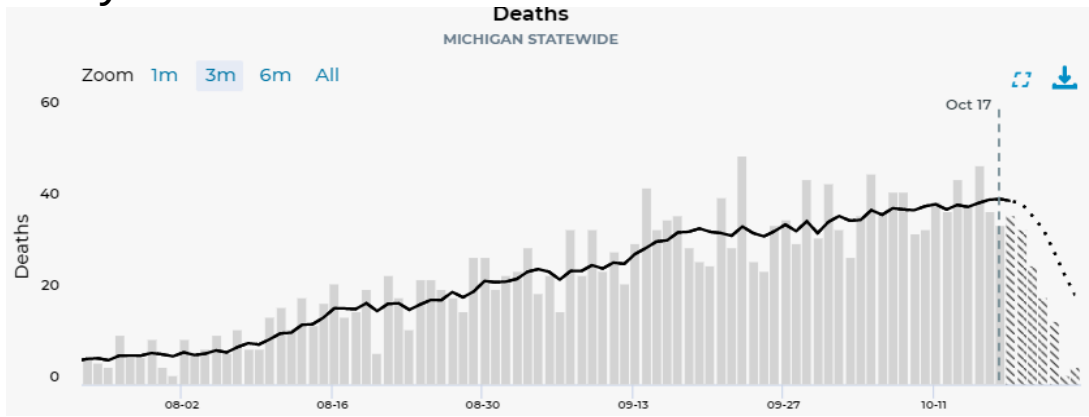
Daily Inpatient Beds Occupied by COVID patients



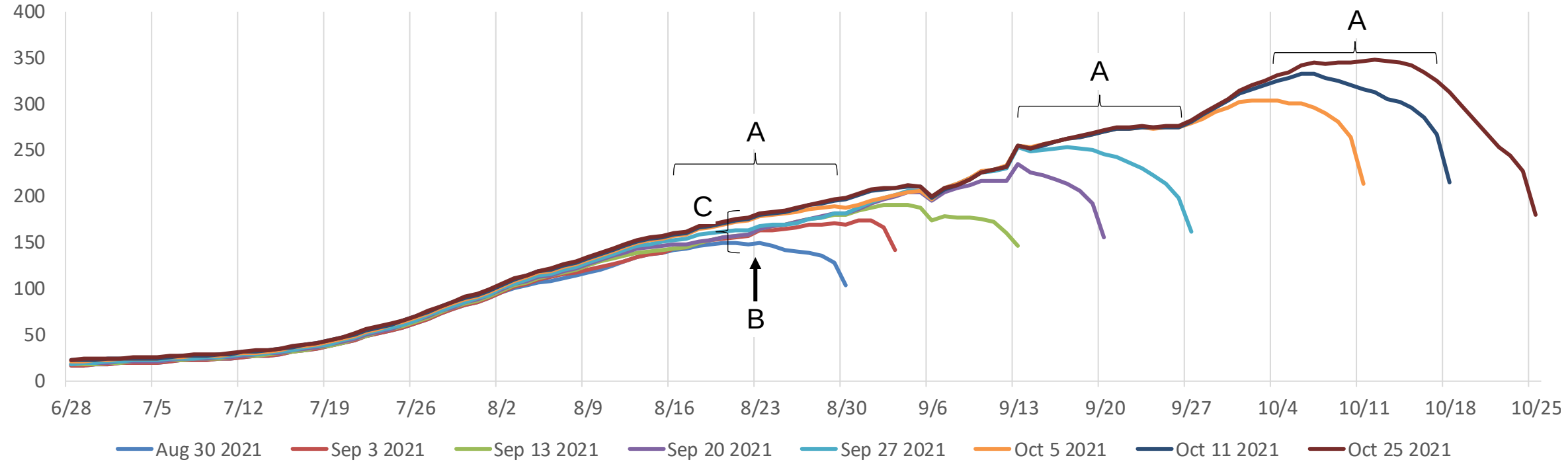
Daily Case Rate



Daily Deaths



Longer backfill times are delaying reliable daily new confirmed and probable cases per million (7-day rolling average) by more than 7 days

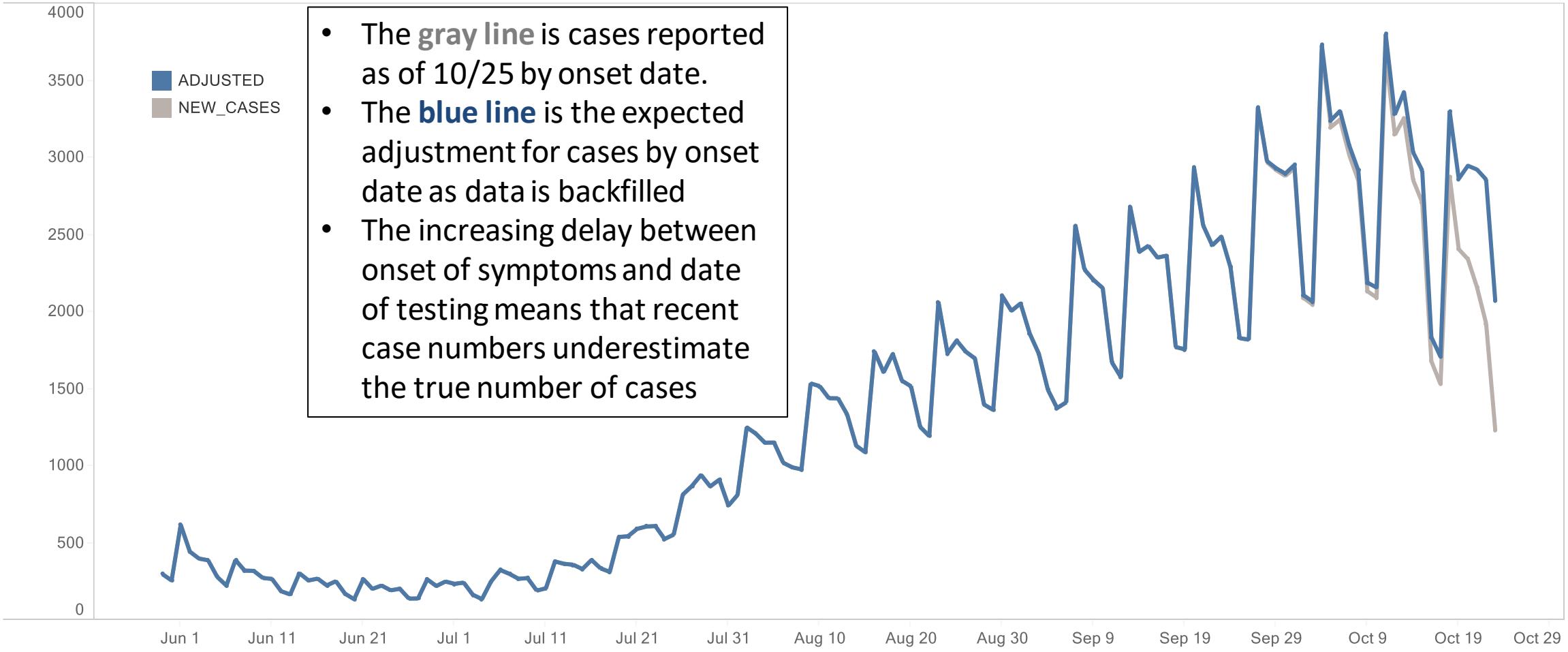


- Each vertical line represents 7 days and, currently, the reporting lag for cases by onset date is one week
- Longer backfill times are impacting trend numbers and weekly comparisons as data 7 days prior is further updated 14 days prior [shown in A]
- Data continues to be updated even after 14 days. For example, the **8/23 case rate** was reported 148.7 as of 8/30 (traditional 7-day lag) but was updated to 162.3 as of 9/3 (14-day lag) and continues to update to 181.9 as of 10/25 (9-week lag) [shown in B]
- Delays in seeking tests and reporting symptoms can result in case rate differences up to 22% or +33.2 cases/million 60-days out [shown in C]

Source: MDHHS – Michigan Disease Surveillance System

Michigan Lag-adjusted new COVID cases by onset date

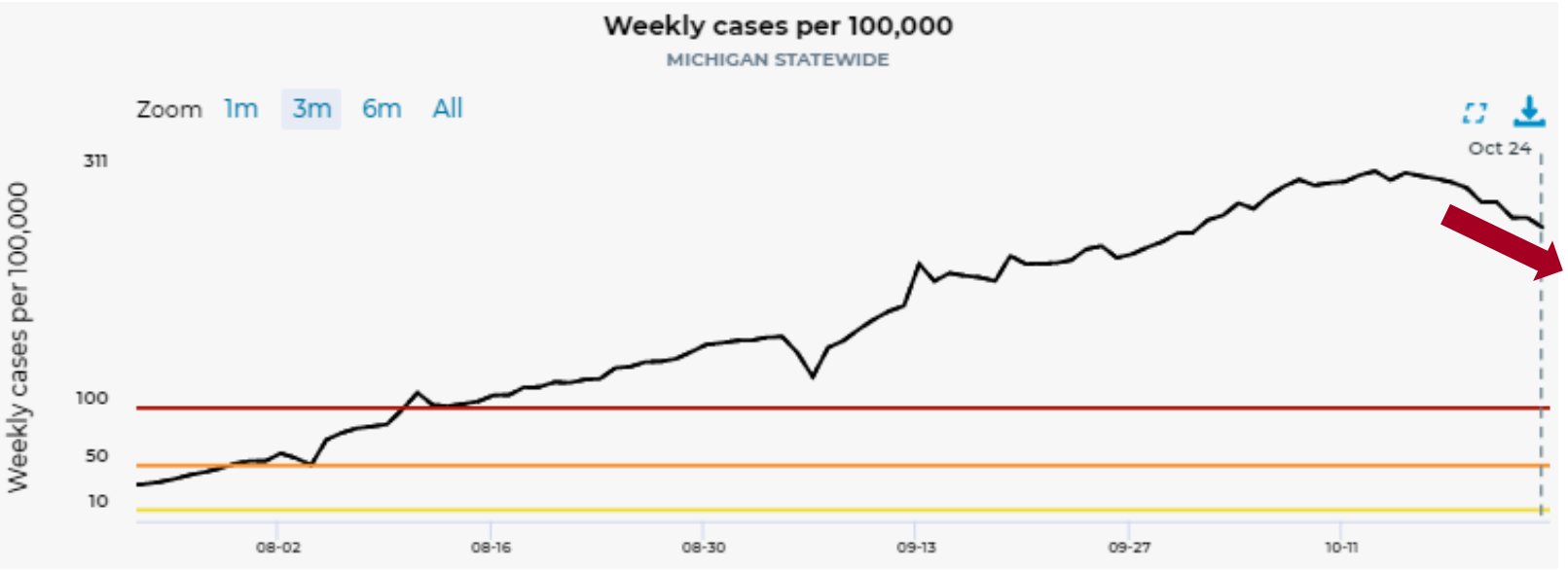
New confirmed cases by onset actual and adjusted as of October 25, 2021 (-2 days)

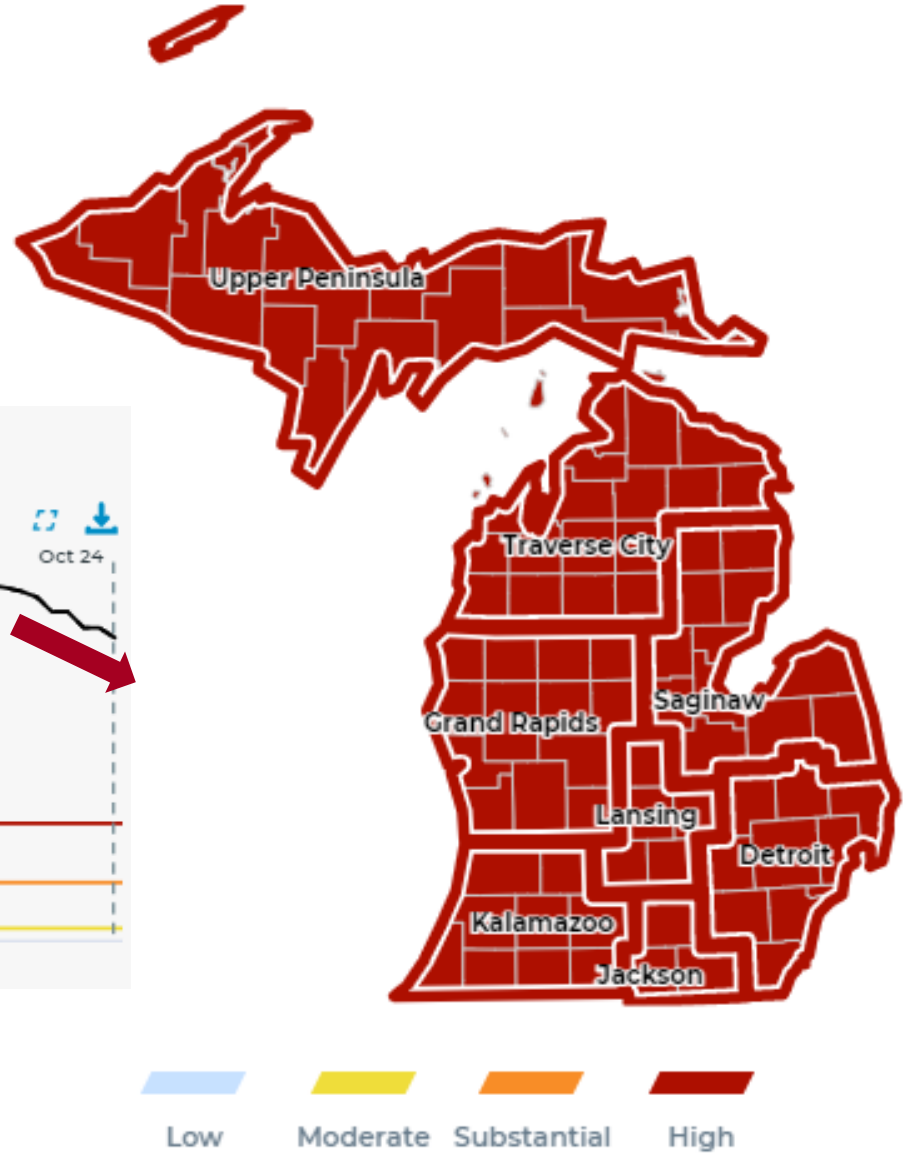


- The **gray line** is cases reported as of 10/25 by onset date.
- The **blue line** is the expected adjustment for cases by onset date as data is backfilled
- The increasing delay between onset of symptoms and date of testing means that recent case numbers underestimate the true number of cases

Michigan at High Transmission Level

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

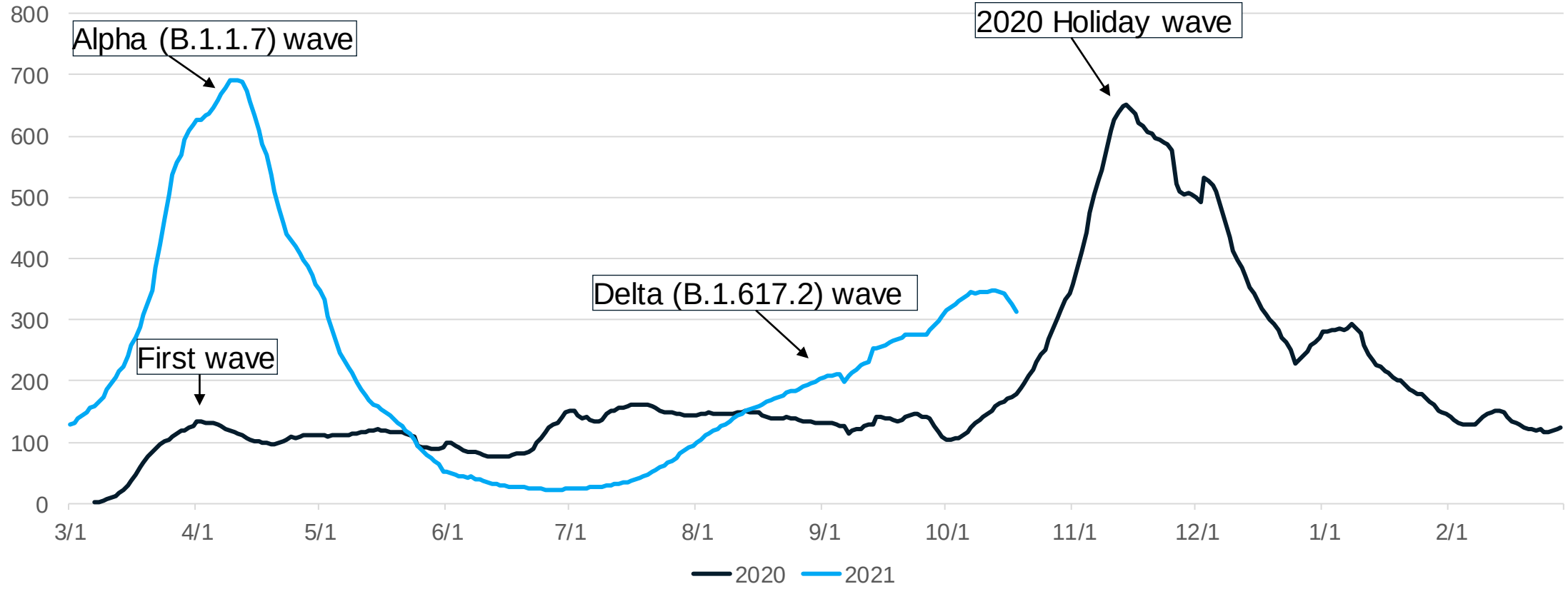




Time Trends – Annual Comparison

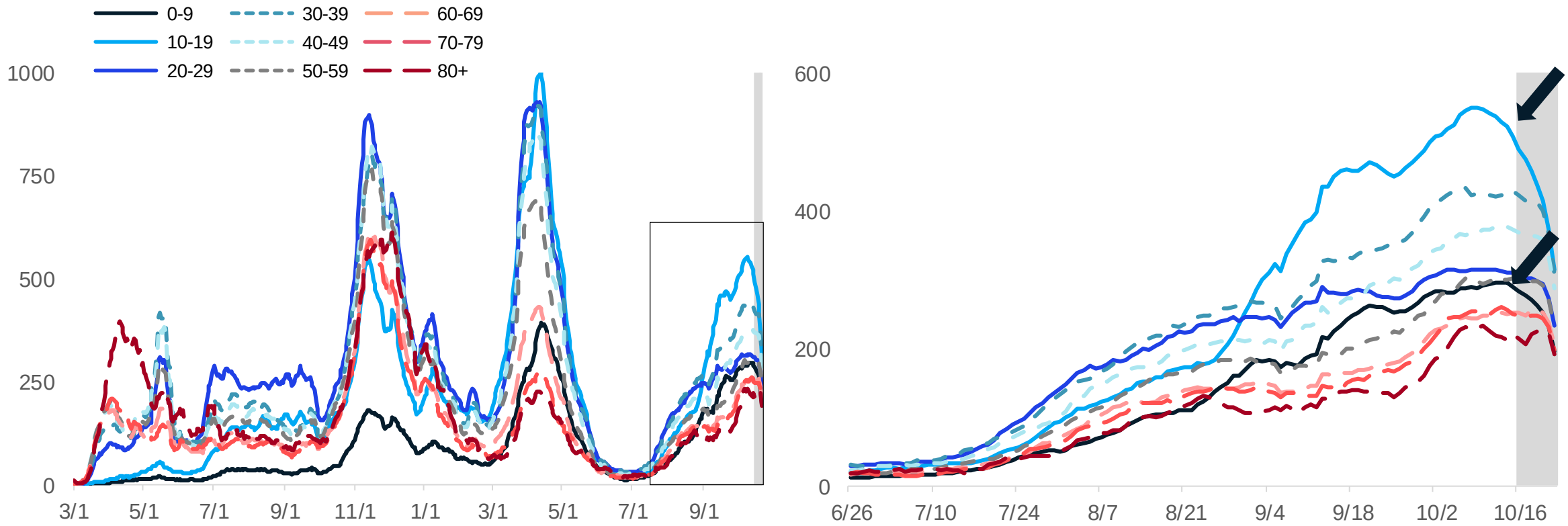
- We are heading into the winter months (and holiday season) starting at higher cases rates than last year

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 currently decreasing
- Case rates for all age groups are between 203 and 465 cases per million (through 10/18)
- Case rates remain highest for 10-19-year-olds

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

Number of Cases and Case Rates by Age Group, data as of Oct 25

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

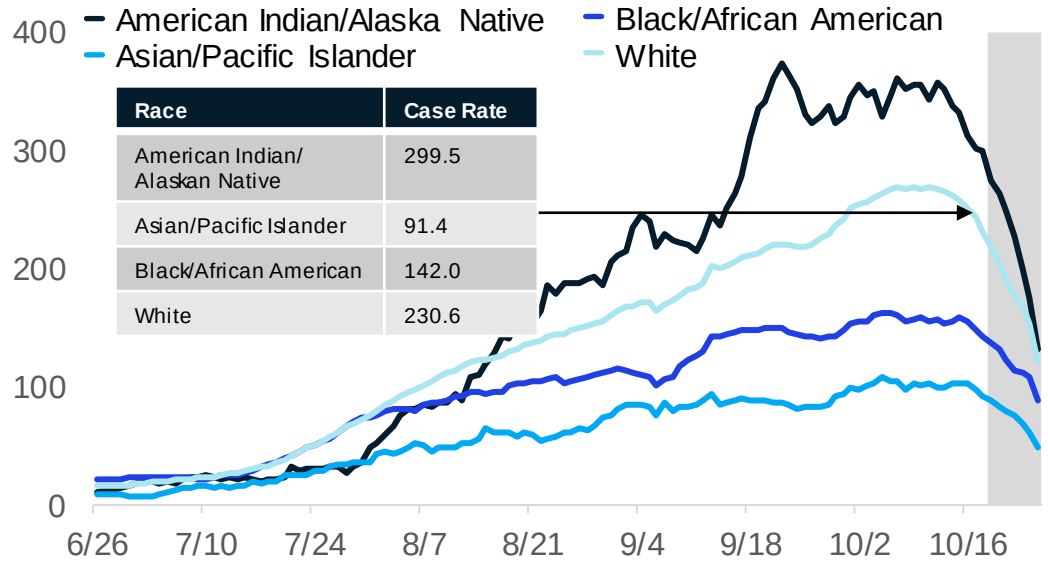
Age Group	Average† daily cases	Average† Daily Case Rate	One Week % Change (Δ #)*
0-9	318.7	276.5	-7% (-24)
10-19	**583.6**	**465.0**	**-15% (-104)**
20-29	394.0	285.6	-10% (-44)
30-39	473.1	**390.0**	-8% (-43)
40-49	405.1	**343.5**	-9% (-38)
50-59	373.4	276.6	-8% (-31)
60-69	303.9	238.2	-5% (-15)
70-79	174.9	228.0	-10% (-19)
80+	84.3	203.5	-11% (-10)
Total¶	**3,127.0**	**312.8**	**-10% (-334)**

† 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 (583.6) and avg. daily case rate (465.0 case/mil) are highest for those aged 10-19
- Case rates for age groups 10-19, 30-39, and 40-49 are higher than the state
- 52-week low case rates were on June 26, 2021

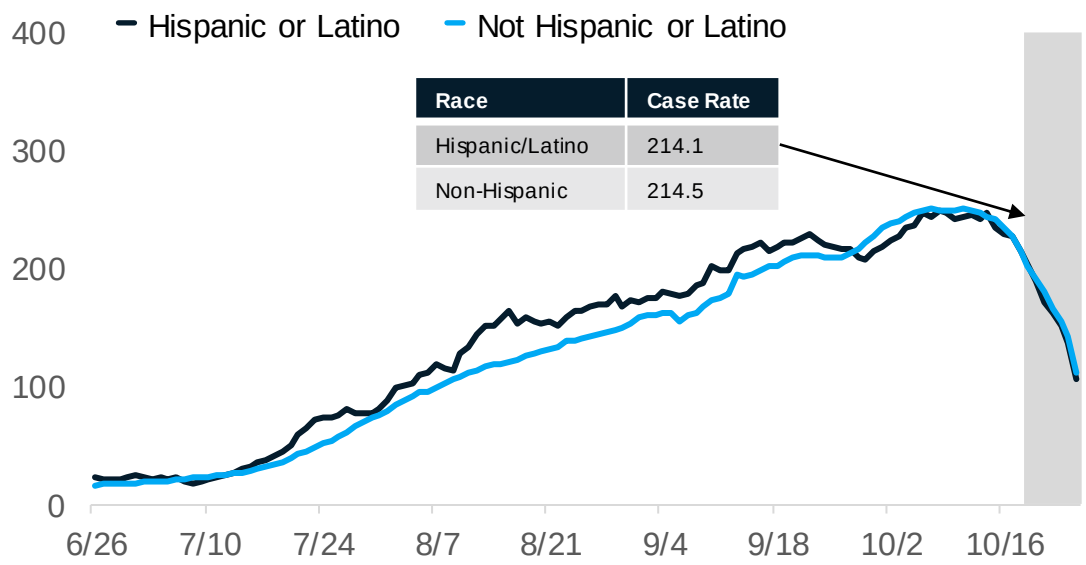
Case Rates by Reported Racial and Ethnic Group

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



Race	Case Rate
American Indian/ Alaskan Native	299.5
Asian/Pacific Islander	91.4
Black/African American	142.0
White	230.6

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



Race	Case Rate
Hispanic/Latino	214.1
Non-Hispanic	214.5

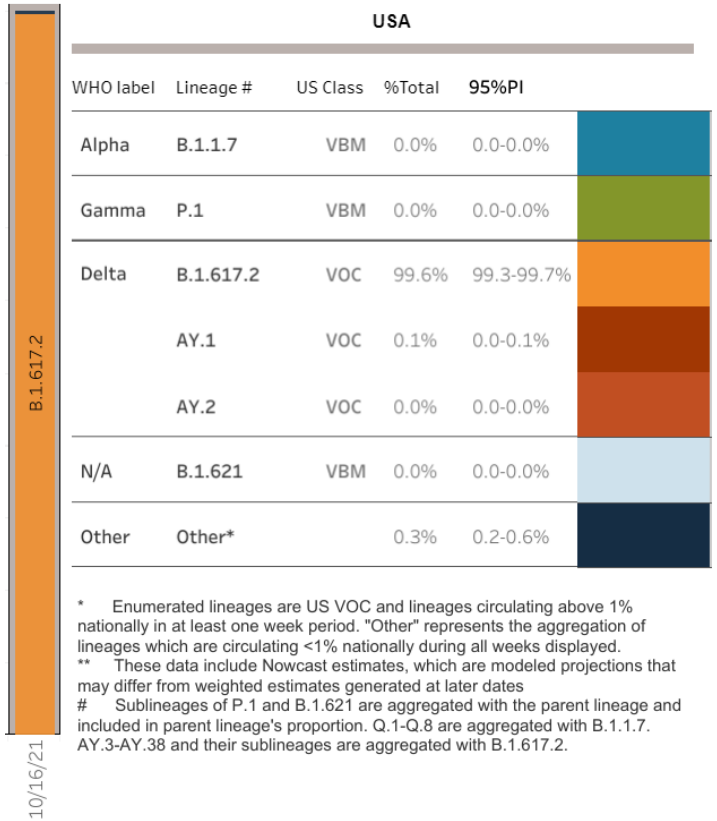
Updates since last week:

- Cases per million are declining 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**
- In the past 30 days, 25% (↑2%) of race data and 30% (↑2%) 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 10 – Oct 16 (NOWCAST)

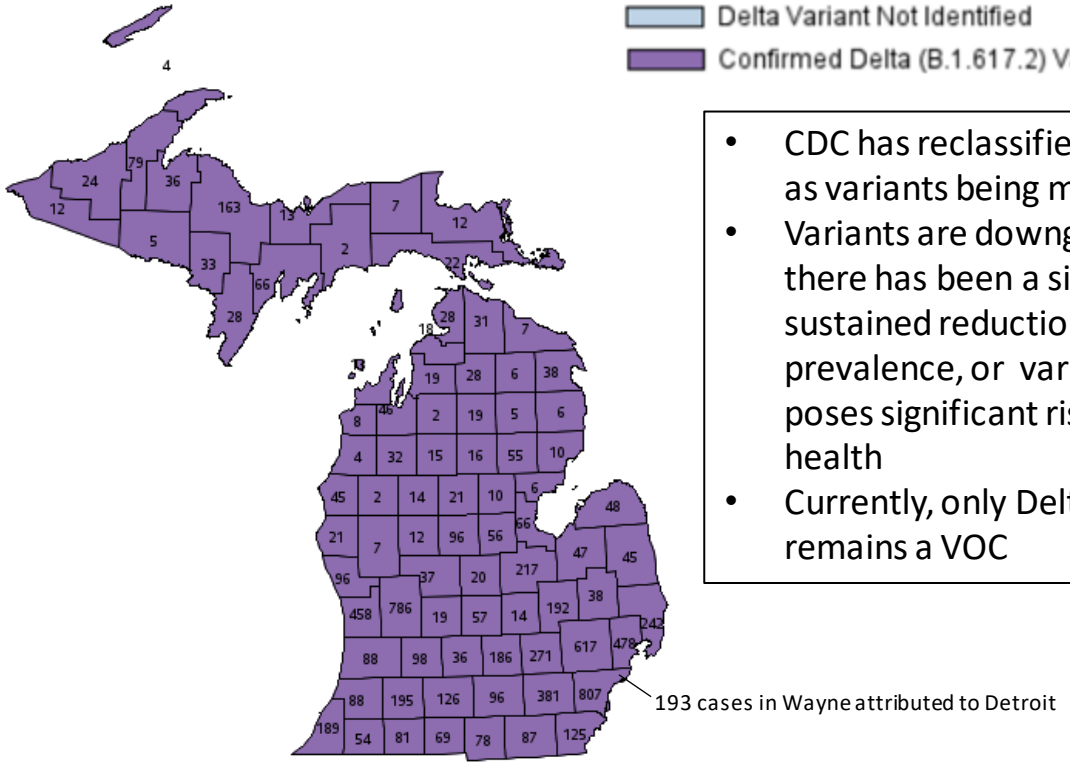


USA

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	99.6%	99.3-99.7%
	AY.1	VOC	0.1%	0.0-0.1%
	AY.2	VOC	0.0%	0.0-0.0%
N/A	B.1.621	VBM	0.0%	0.0-0.0%
Other	Other*		0.3%	0.2-0.6%

* 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.

Variants of Concern in Michigan, Oct 25



- 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 Sequenced Prevalence
B.1.617.2 (delta)	7,853	83	100%

Data last updated Oct 25, 2021
Source: MDSS

Key Messages: Healthcare Capacity and COVID Severity

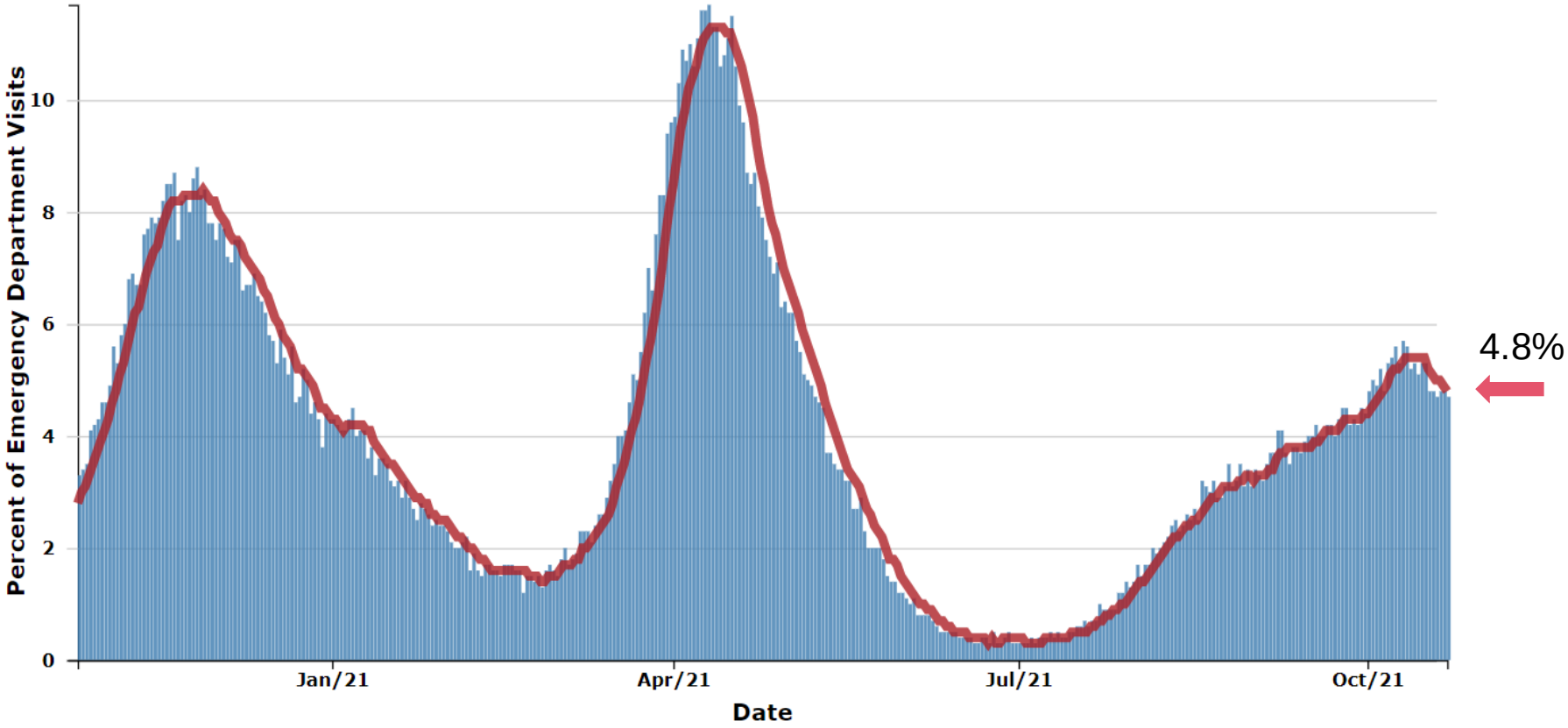
Emergency Department visits, Hospital Admissions, and Hospital Census have mixed trends

- 4.8% of ED visits are for COVID diagnosis (down from 5.1% last week)
- Hospital admissions have plateaued for most age groups this week
- Hospital census is plateaued this week (vs. up 4% week prior)
- Four regions experienced increasing trends in hospital census this week (Regions 1, 2N, 6, and 7)
  - Regions 1, 2S, 3, 6 and 7 now have above 200/million population hospitalized
- Overall, volume of COVID-19 patients in intensive care has increase 6% since last week (vs. plateau last week)

Death rate has increased to 4.0 daily deaths/million residents (up from 3.4 deaths/million last week)

- Overall trends for daily average deaths are increasing for American Indian/Alaskan Natives, Whites, Non-Hispanics, and Hispanics
- Currently, American Indian/Alaskan Natives have the highest death rate (4.0 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

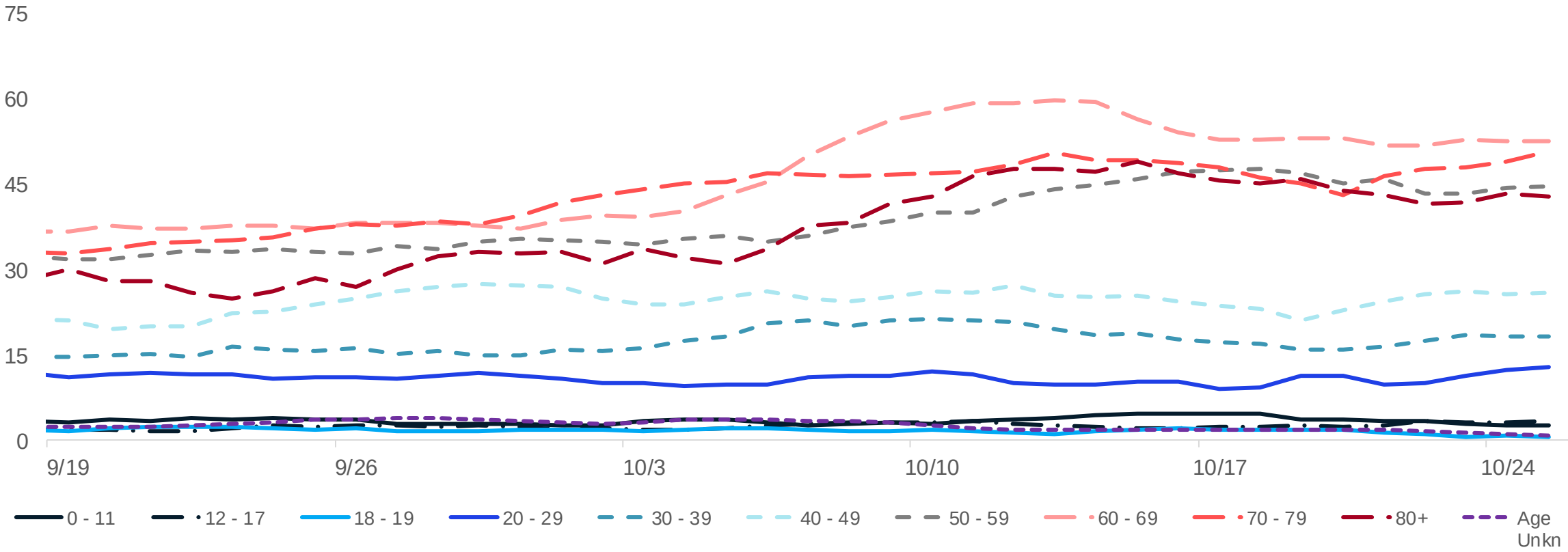
Michigan Trends in Emergency Department (ED) Visits for Diagnosed COVID-19



- Trends for ED visits have decreased to 4.8% since last week (5.1% week prior)
- Trends vary by age groups with most age groups seeing early declines
- Over past week, those 65-74 years saw highest number of avg. daily ED CLI visits (6.7%), but those between 40+ all above state average

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

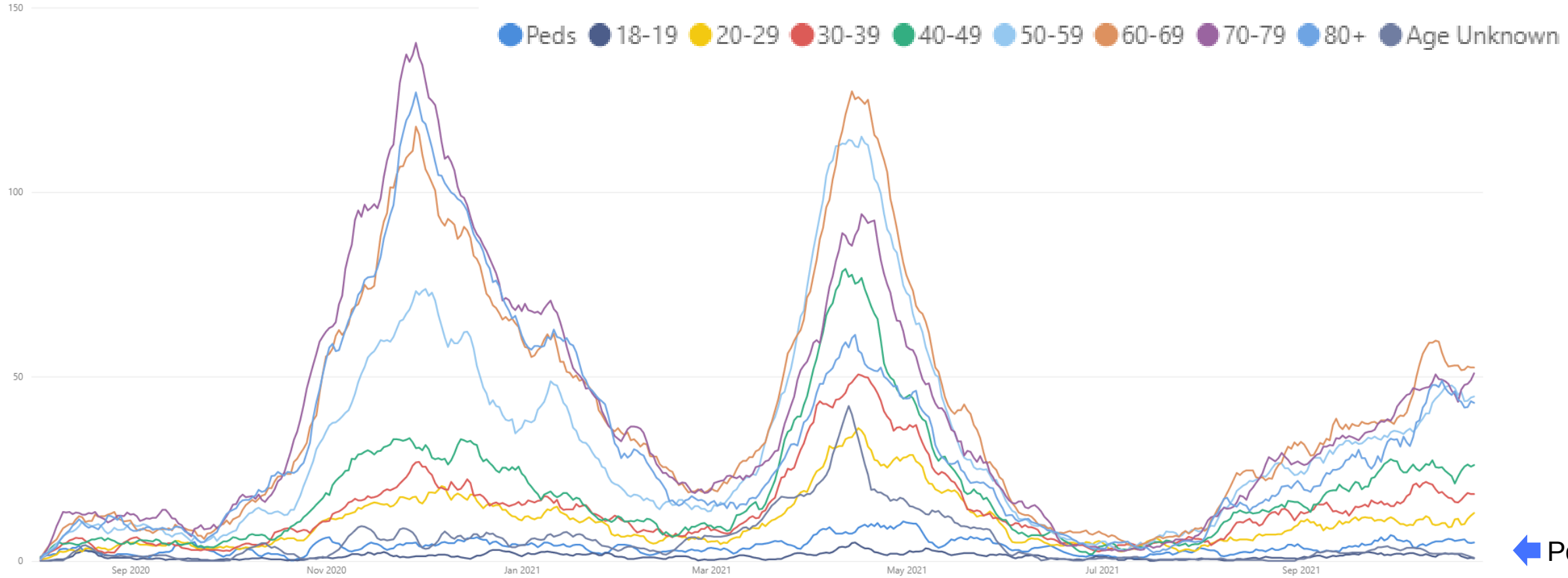
Average Hospital Admissions by Age Groups



- Trends for daily average hospital admissions have increased 1% since last week (vs. 4% decrease prior week)
- Most age groups experienced relatively stable numbers in daily hospital admissions over the past week
- Over the past week, those 60-69 years have seen the highest number of avg. daily hospital admissions (52 admissions)

Source: CHECC & EM Resource

Average Hospital Admissions Are Increase for all Age Groups



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- Most age groups experienced relatively stable numbers in daily hospital admissions over the past week
- Over the past week, those 60-69 years have seen the highest number of avg. daily hospital admissions (52 admissions)

Source: CHECC & EM Resource

Hospital Admissions and Admission Rates by Age Group

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	2.7	2.0	-41% (-2)
12-17	3.3	4.4	35% (+1)
18-19	0.7	2.7	-64% (-1)
20-29	13.0	9.4	40% (+4)
30-39	18.1	15.0	-7% (+1)
40-49	26.0	22.0	13% (+3)
50-59	44.6	**33.0**	**-6% (-3)**
60-69	**52.4**	**41.1**	-1% (-<1)
70-79	50.9	**66.3**	10% (+5)
80+	42.9	**103.5**	-5% (-2)
Total¶	**255.4**	**25.6**	**1% (+4)**

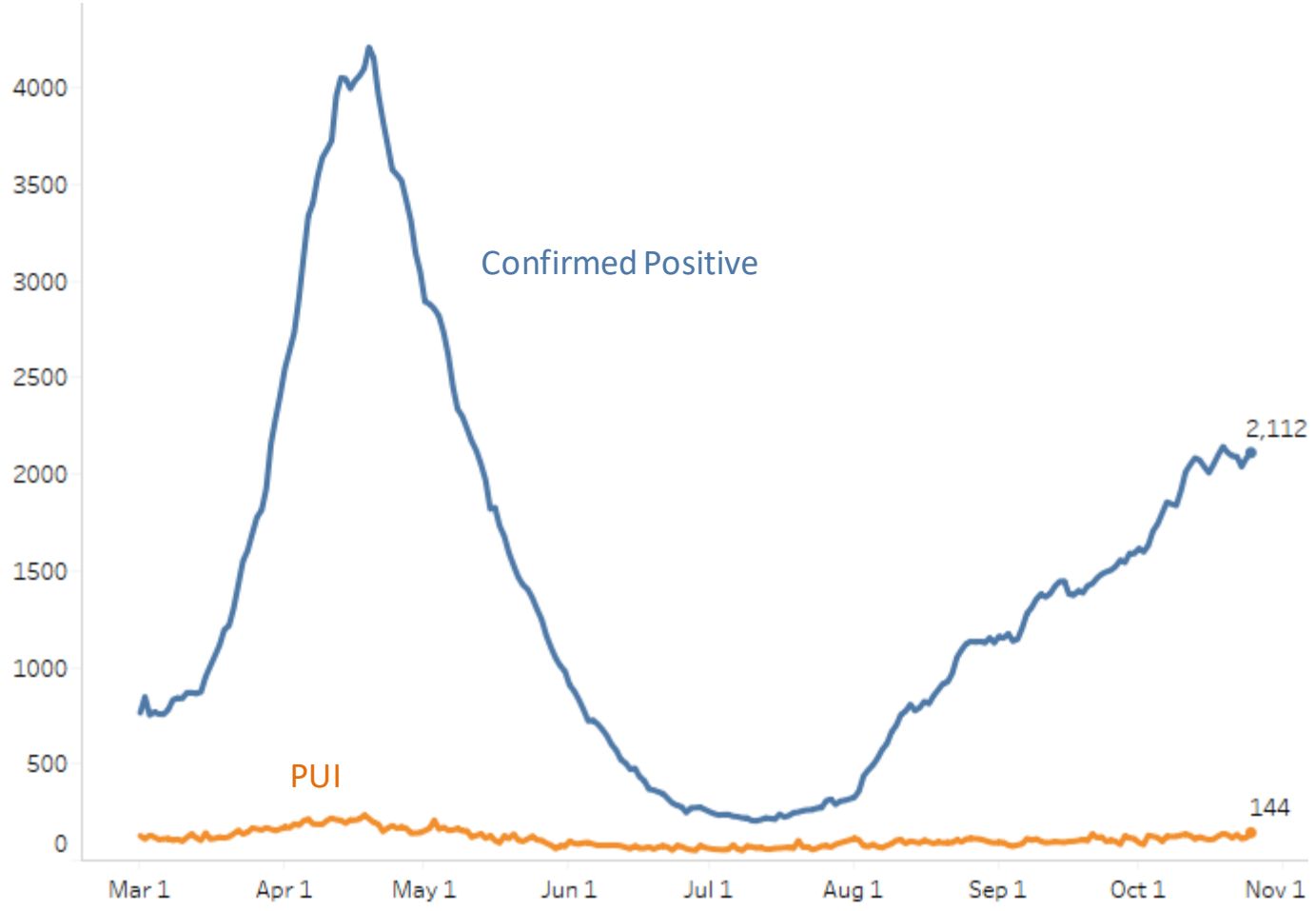
* Rate per 1 million residents; † Rolling 7-day average; ¶ Total may not reflect state due to missing age data
Note: Hospital Admission data reflects date data was submitted
Source: CHECC and EM Resource

- Through October 25, there were an average of 255 hospital admissions per day due to COVID-19, which is similar to last week (↑1%, +4)
- All age groups were relatively stable this week with most fluctuations less than 5 admissions per age group
- The largest one-week percent increase in admissions was among those 20-29 years of age (+4, +40%)
- Average number of daily hospital admissions (52) are highest for those aged 60-69, which is 1 fewer than last week
- Average daily hospital admission rate (103.5 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

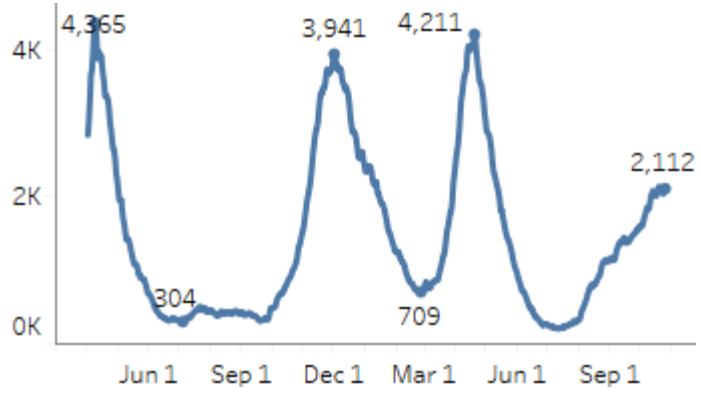
Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 3/1/2021 – 10/25/2021
Confirmed Positive & Persons Under Investigation (PUI)



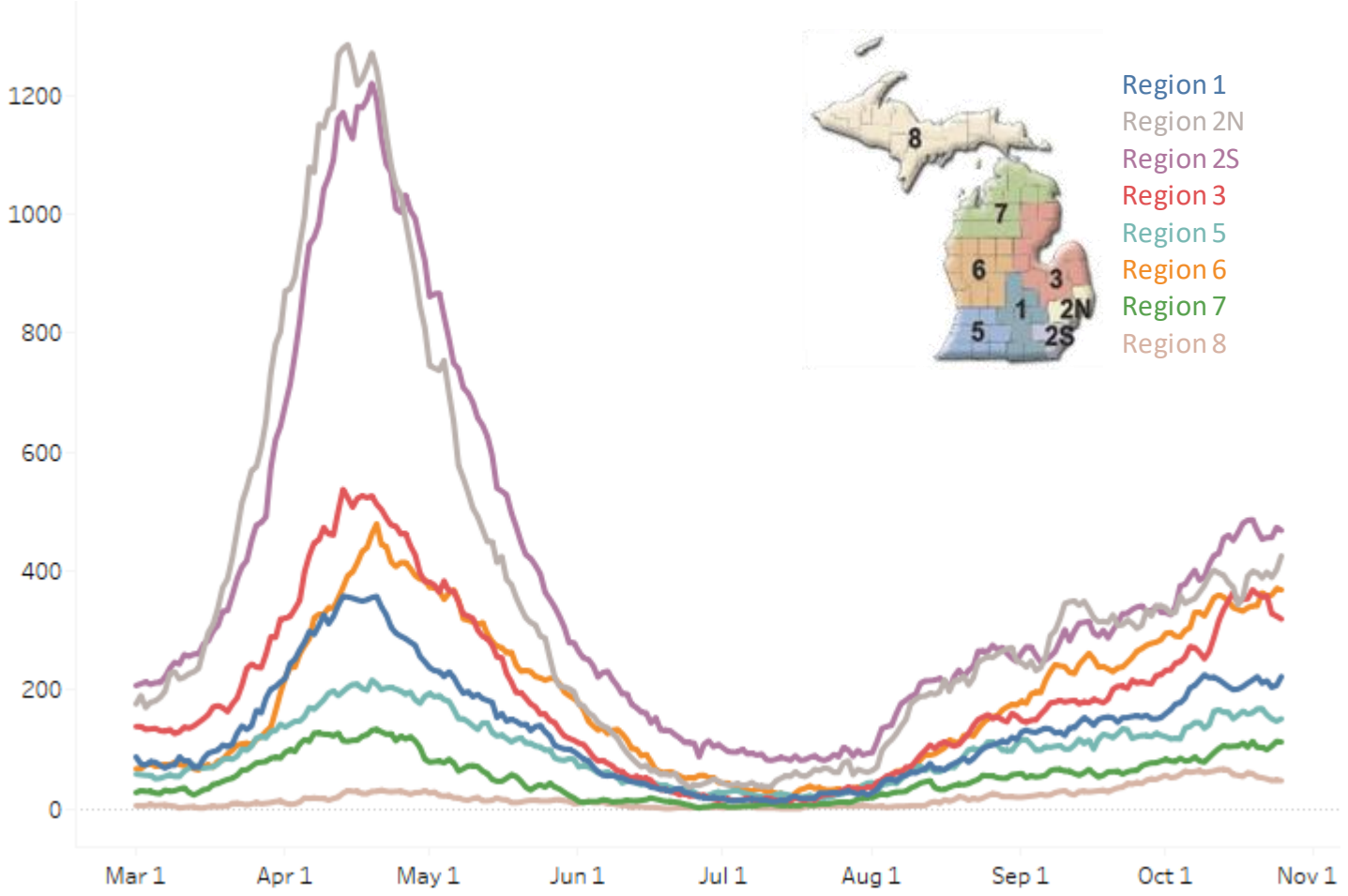
COVID+ census in hospitals is flat from the previous week (previous week's increase was 4%)

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 3/1/2021 – 10/25/2021
Confirmed Positive by Region



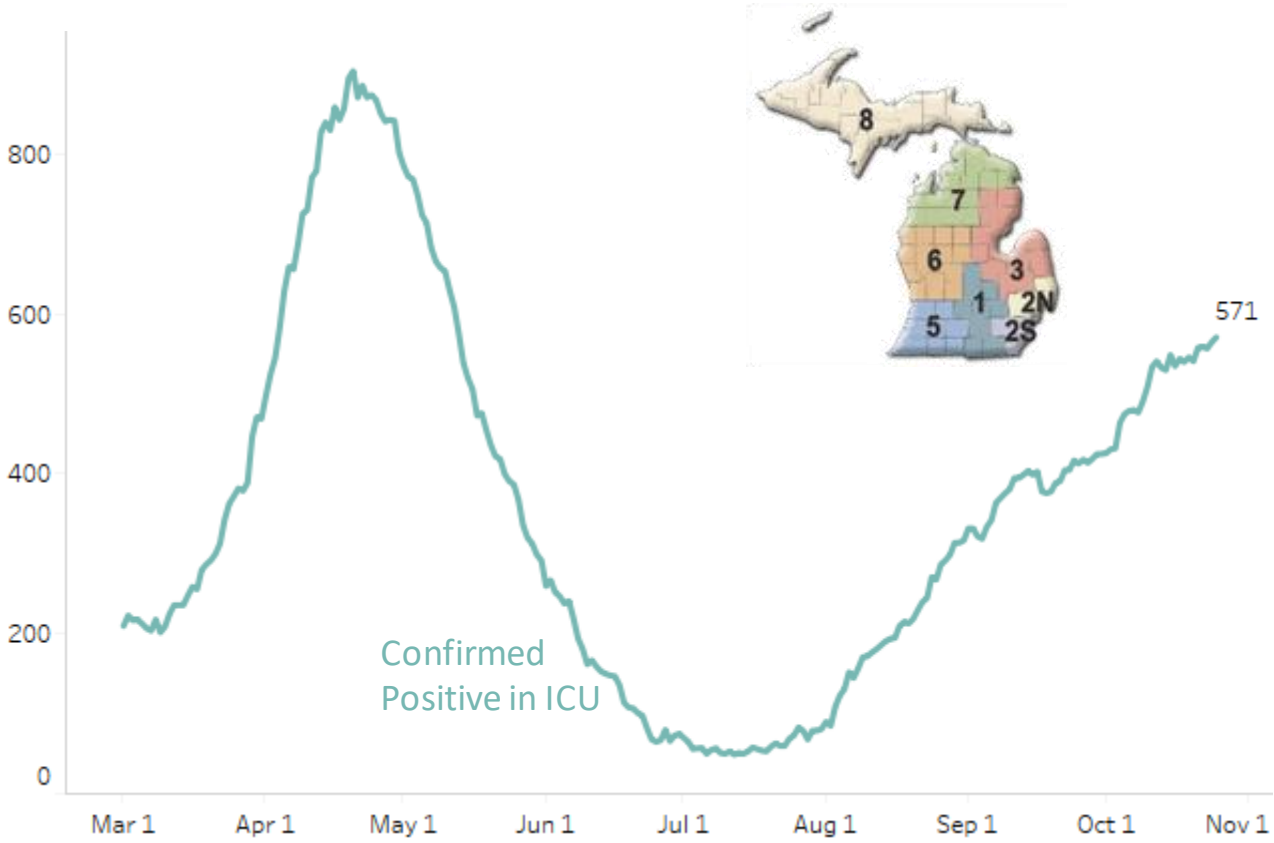
Hospitalizations for COVID+ patients have increased in some regions (1, 2N, 6, 7) while decreasing in other regions (2S, 3, 5,8)

Regions 1, 2S, 3, 6 and 7 have greater than 200/M population hospitalized.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	222 (5%)	205/M
Region 2N	425 (9%)	192/M
Region 2S	468 (-4%)	210/M
Region 3	319 (-10%)	281/M
Region 5	151 (-6%)	158/M
Region 6	368 (9%)	251/M
Region 7	112 (9%)	224/M
Region 8	47 (-22%)	151/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 3/1/2021 – 10/25/2021
Confirmed Positive in ICUs



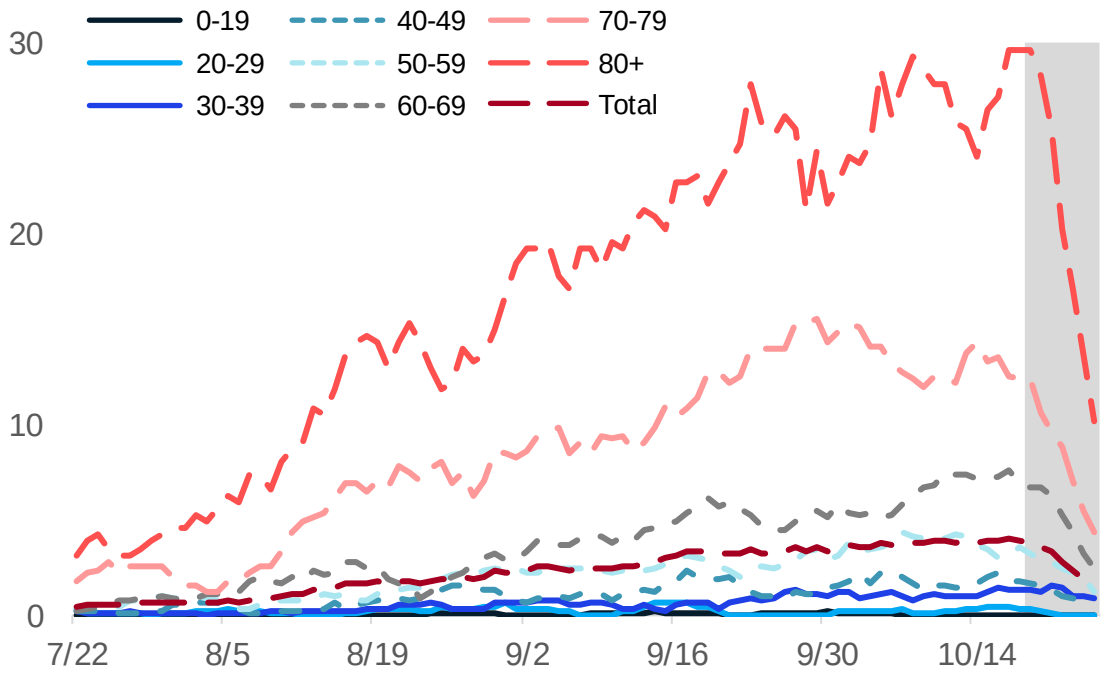
Overall, the census of COVID+ patients in ICUs has increased 6% from last week. ICU census has decreased in Regions 7 and 8.

Regions 1, 2S, and 3 have overall adult ICU occupancy greater than or equal to 85%. Regions 1, 6, 7 have >30% 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	64 (19%)	87%	33%
Region 2N	95 (0%)	76%	16%
Region 2S	137 (11%)	86%	19%
Region 3	91 (11%)	92%	27%
Region 5	37 (3%)	77%	20%
Region 6	87 (7%)	84%	38%
Region 7	44 (-17%)	82%	31%
Region 8	16 (-6%)	60%	25%

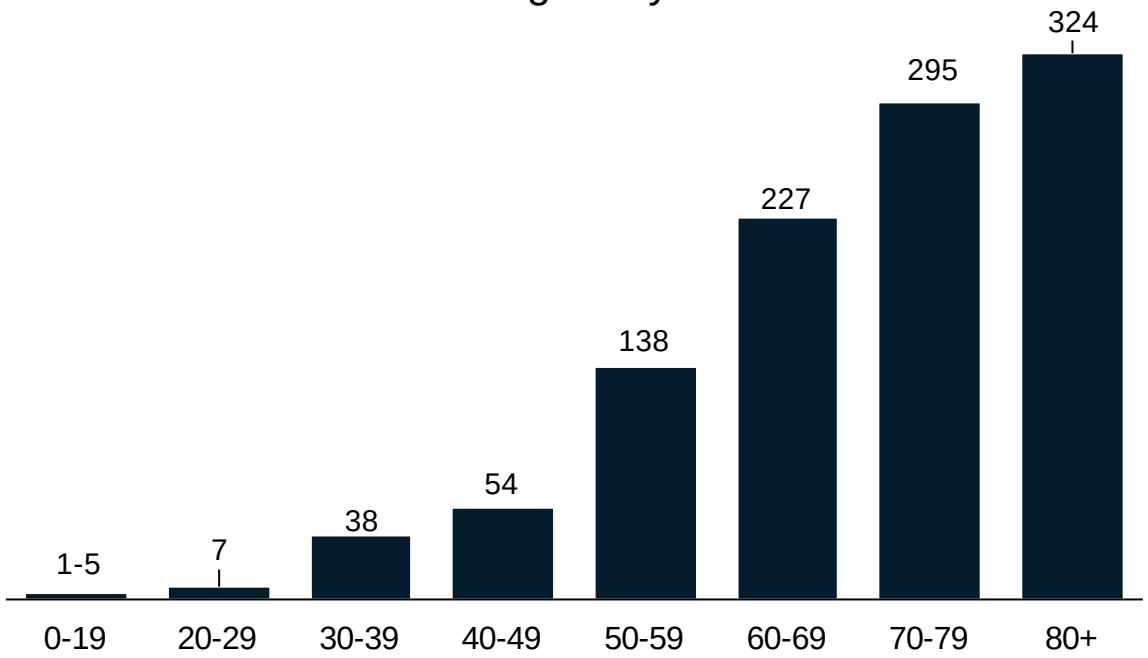
Average and total new deaths, by age group

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 10/18/2021)

- 22% of deaths below age sixty

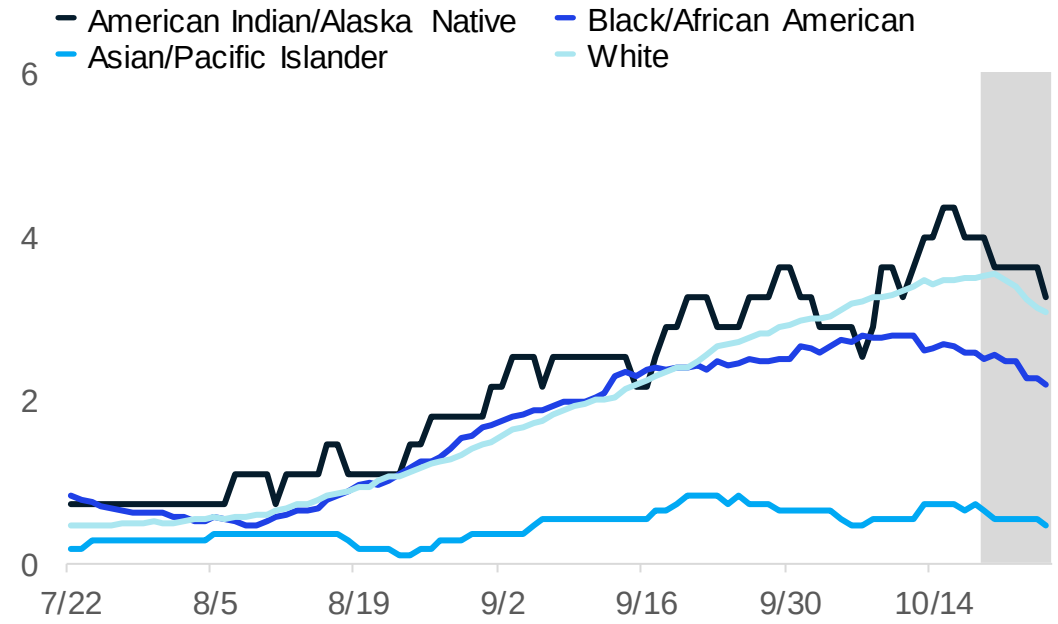


- Through 10/18, the 7-day avg. death rate is more than 10 daily deaths per million people for those over the age of 70
- In the past 30 days, there were between 1-5 deaths among confirmed and probable COVID-19 cases under the age of 20
- 30-day proportion of deaths among those under 60 years of age is steady from the prior week

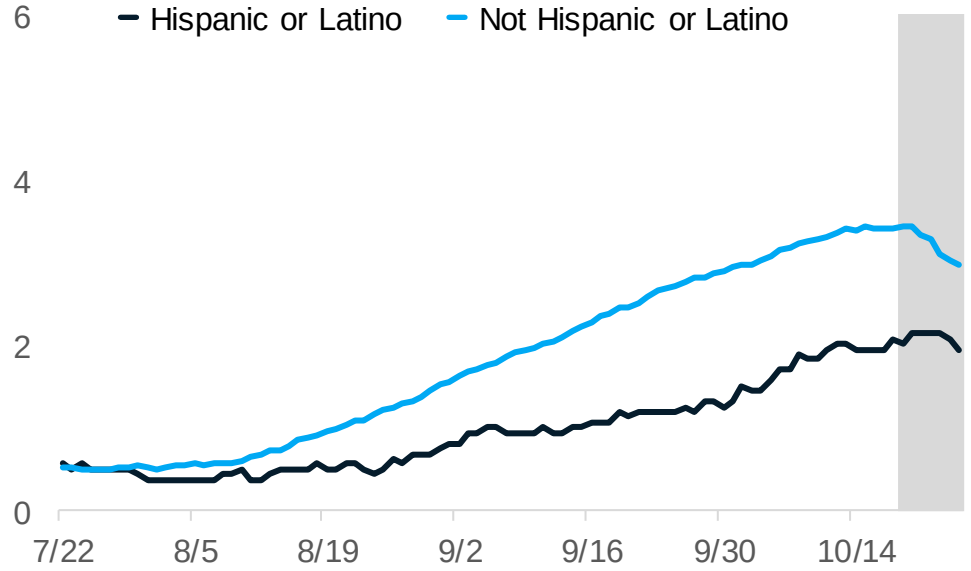
Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System (MDSS)

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



- Deaths are lagging indicator of other metrics
- Overall trends for daily average deaths are increasing for American Indian/Alaskan Natives, Whites, Non-Hispanics, and Hispanics
- Currently, American Indian/Alaskan Natives and Whites have the highest death rate (4.0 deaths/million)

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

Key Messages: Public Health Response

COVID-19 Vaccination

- 3,429 first doses administered each day (7-day rolling average*); total administrations increasing
- Most administered frequently by pharmacies, local health departments, and hospitals
- More than 521,222 third doses administered as of 10/26, may include additional dose or booster dose
- More than 5.3 million people (53.3% of the population) in the state are fully vaccinated

Breakthrough

- Approximately 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

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

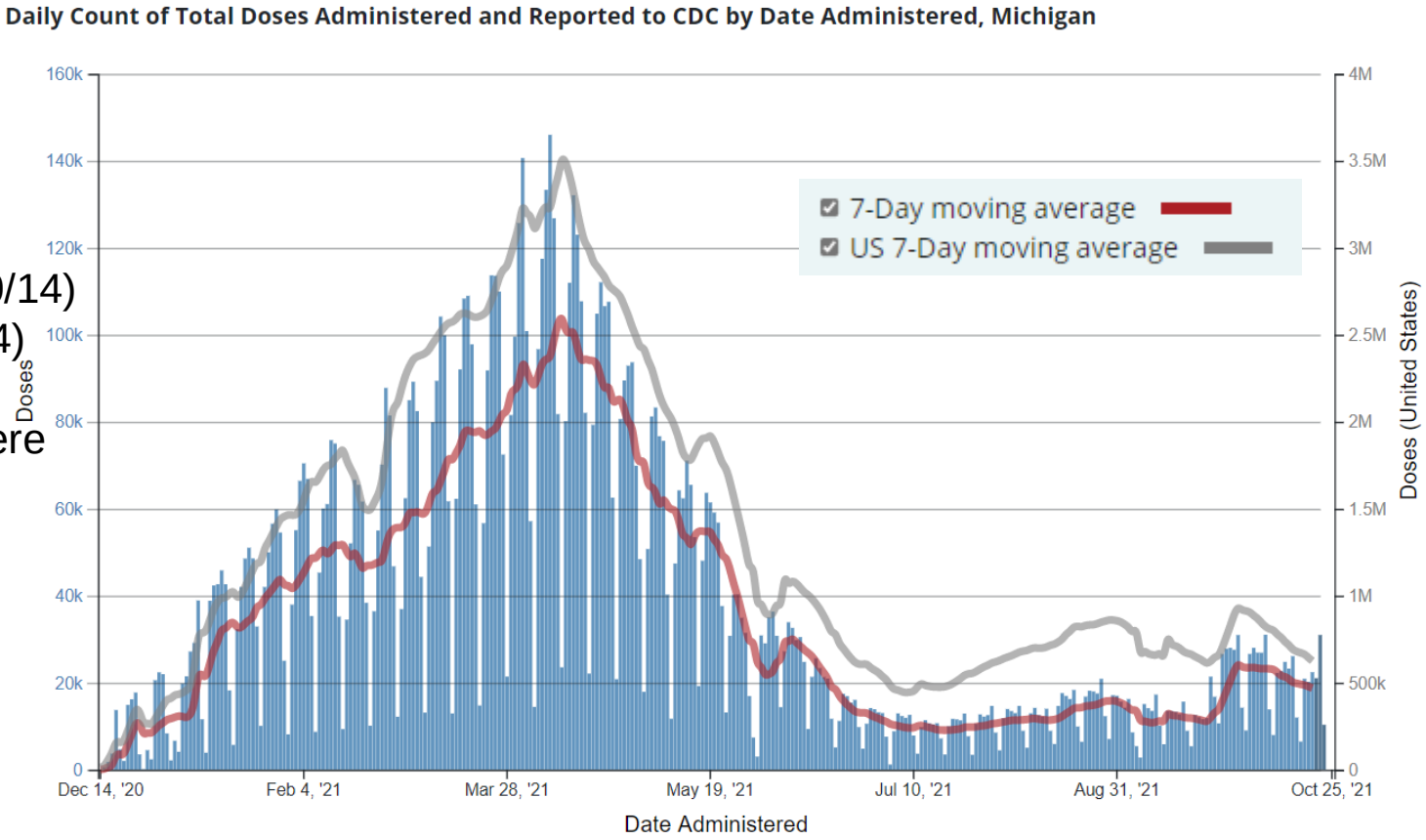
Average daily doses administered declining (data through 10/26/2021)

14,329,880 doses delivered to providers and
11,287,404 doses administered*

MI 7-day rolling average ending October 20th
- 18,460 total doses/day on average† (20,827 on 10/14)
- 3,429 first doses/day on average † (3,724 on 10/14)

Total primary series doses in month of September were most frequently administered¶ by:
Pharmacies (209,531)
LHD (17,252) and hospitals (15,408)
Family practice (10,753) and FQHCs (8,880)

Third Doses
- 521,222 third doses administered as of 10/26



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

5.32 Million Michiganders fully vaccinated and 53.3% of total population fully vaccinated

5.32 million people in the state are fully vaccinated*

84.5% of people aged 65 and older have completed the series (↑0.5%)*

57.9% of total population initiated (↑0.6%)*

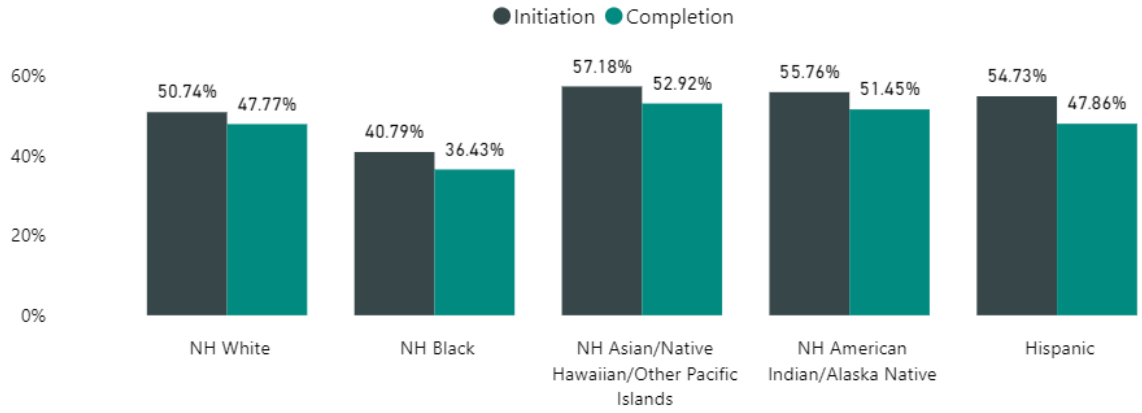
Race/Ethnicity¶ for those 12 years and older:

- Initiation coverage highest among those of Non-Hispanic (NH) Asian, Native Hawaiian or Pacific Islander Race (57.2%), then NH American Indian (55.8%), NH White (50.7%), NH Black or African American Races (40.8%).
- Initiation is at 54.7% for those of Hispanic ethnicity
- Completion follows the same pattern
- 15.1% data missing or unknown

Vaccination Coverage in Michigan as of 10/26/21

Age Group	% At Least One Dose	% Fully Vaccinated	Number Fully Vaccinated
Total Population	57.9%	**53.3%**	5,322,469
≥ 12 years	67.3%	61.9%	5,322,339
≥ 18 years	69.4%	64.0%	5,019,674
≥ 65 years	89.9%	84.5%	1,491,123

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

Update on breakthrough cases

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 10/19/21):

- **59,291 cases met criteria based on a positive test 14 or more days after being fully vaccinated**
- **Approximately 1% of people who were fully vaccinated met this case definition**
  - **Includes 732 deaths (644 in persons ages 65 years or older)**
  - **1,749 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 189 million people in the United States have been fully vaccinated as of October 18, 2021. CDC is monitoring thesecases 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 19

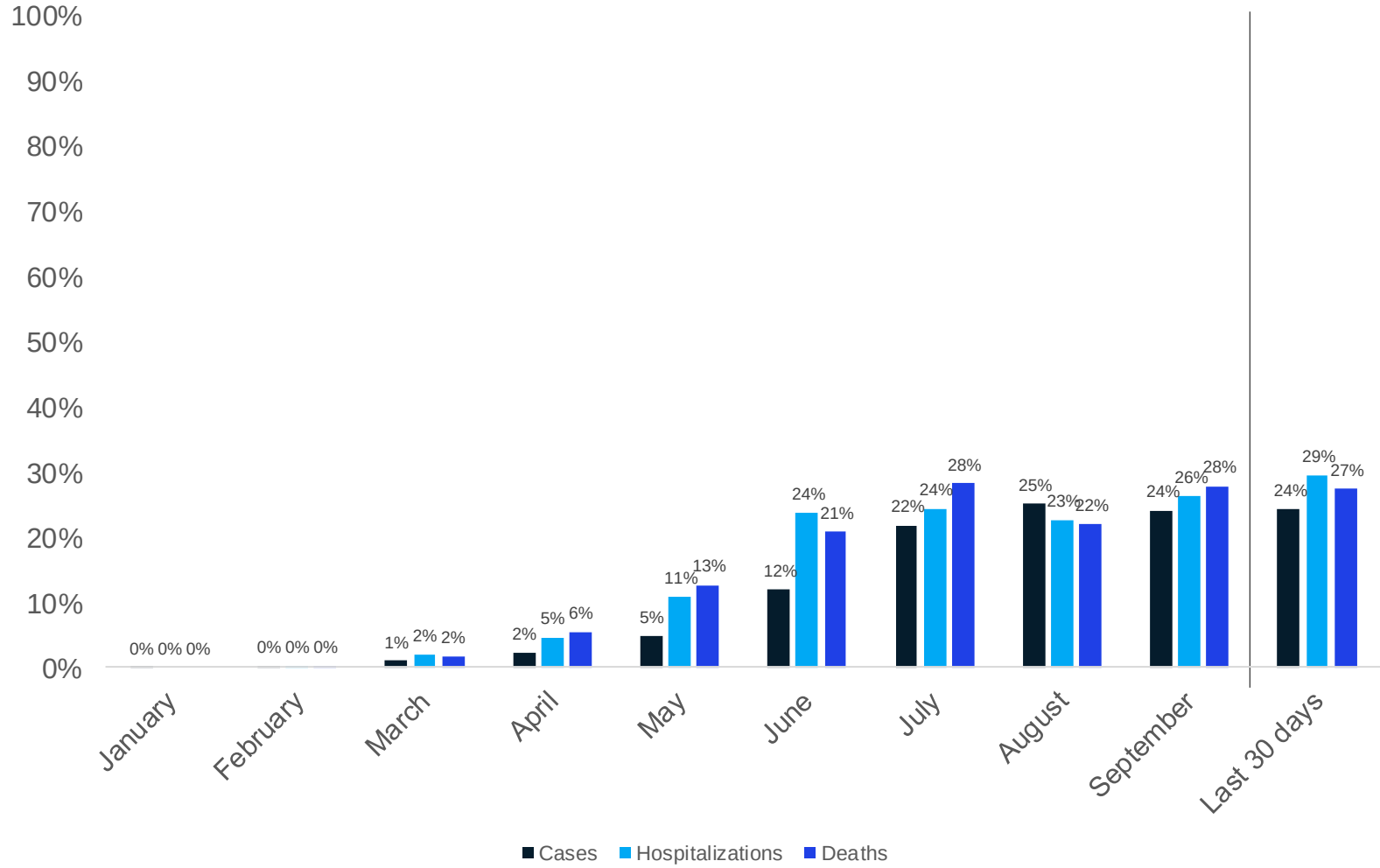
Fully Vaccinated People (5,014,461)		
Cases	**Hospitalization**	**Deaths**
Percent of Cases In People Not Fully Vaccinated (541,133 / 600,424) **90.1%**	Percent of Hospitalizations In People Not Fully Vaccinated (14,223 / 15,972) **89.0%**	Percent of Deaths In People Not Fully Vaccinated (6,115 / 6,847) **89.3%**
541,133 Total Cases Not Fully Vaccinated	**14,223** Total Hospitalized Not Fully Vaccinated	**6,115** Total Deaths Not Fully Vaccinated
Total Breakthrough Cases **59,291**	Total Breakthrough Hospitalizations **1,749**	Total Breakthrough Deaths **732**
1.182% Percent of Fully Vaccinated People who Developed COVID-19 (59,291 / 5,014,461)	**0.035%** Percent of Fully Vaccinated People Who Were Hospitalized for COVID-19 (1,749 / 5,014,461)	**0.015%** Percent of Fully Vaccinated People Who Died of COVID-19 (732 / 5,014,461)
9.9% Percent of Cases Who Were Fully Vaccinated (59,291 / 600,424)	**11.0%** Percent of Hospitalizations Who Were Fully Vaccinated (1,749 / 15,972)	**10.7%** Percent of Deaths Who Were Fully Vaccinated (732 / 6,847)
Total Cases: **600,424**	Total Hospitalizations: **15,972**	Total Deaths: **6,847**

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 ~24-29% of cases, hospitalizations, and deaths
- 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 20 – Oct 19), 24,725 (24%) of 101,871 cases, 428 (29%) of 1,453 hospitalizations, and 142 (27%) of 519 deaths were among fully vaccinated individuals



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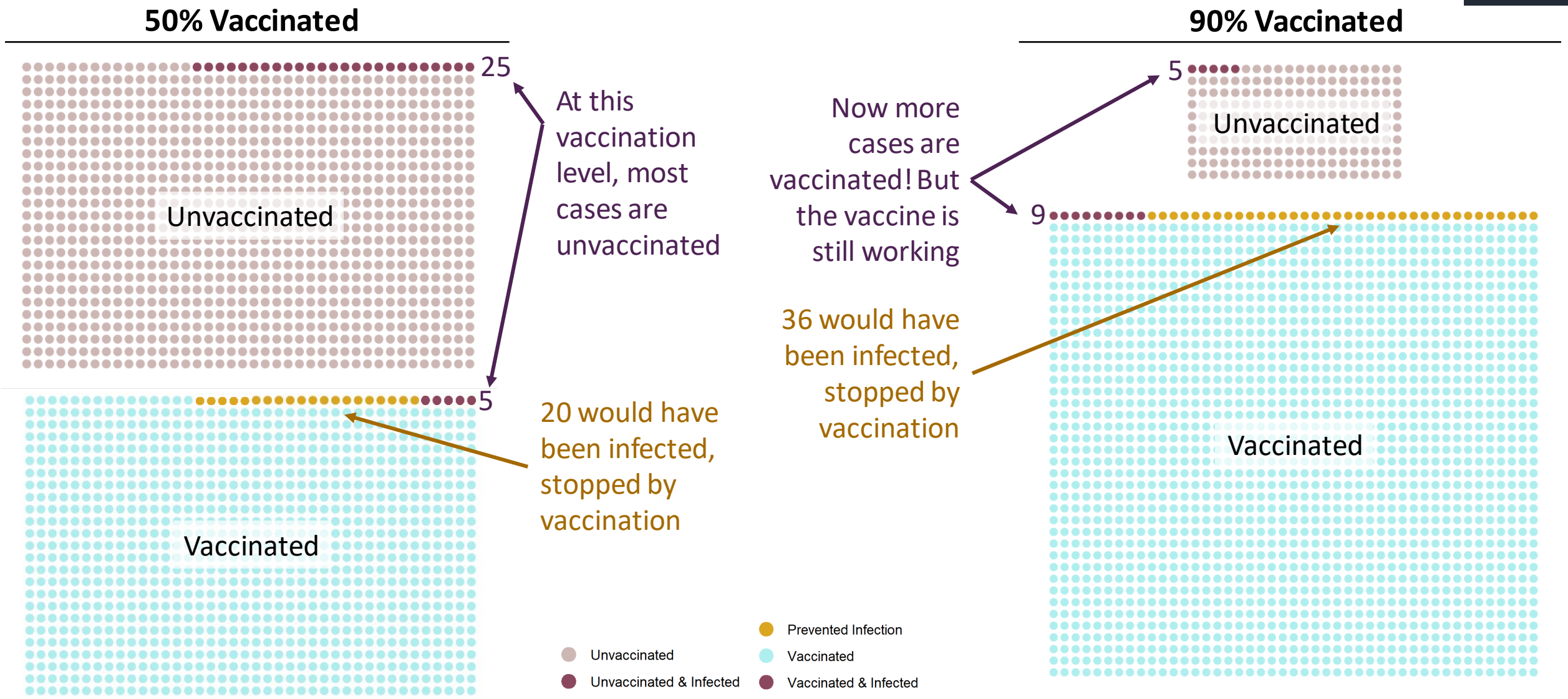
When more people are vaccinated, more cases will come from the vaccinated population



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

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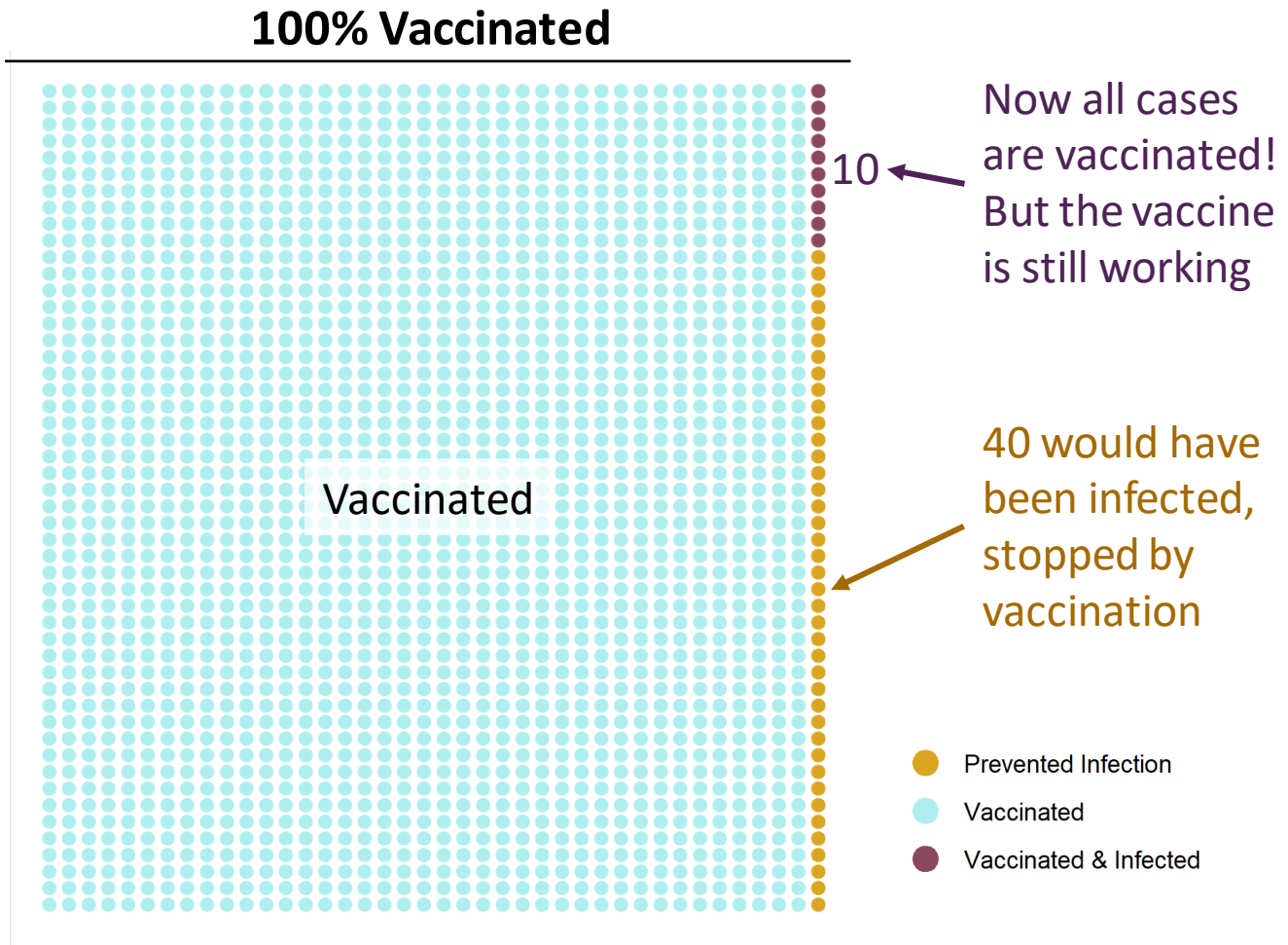
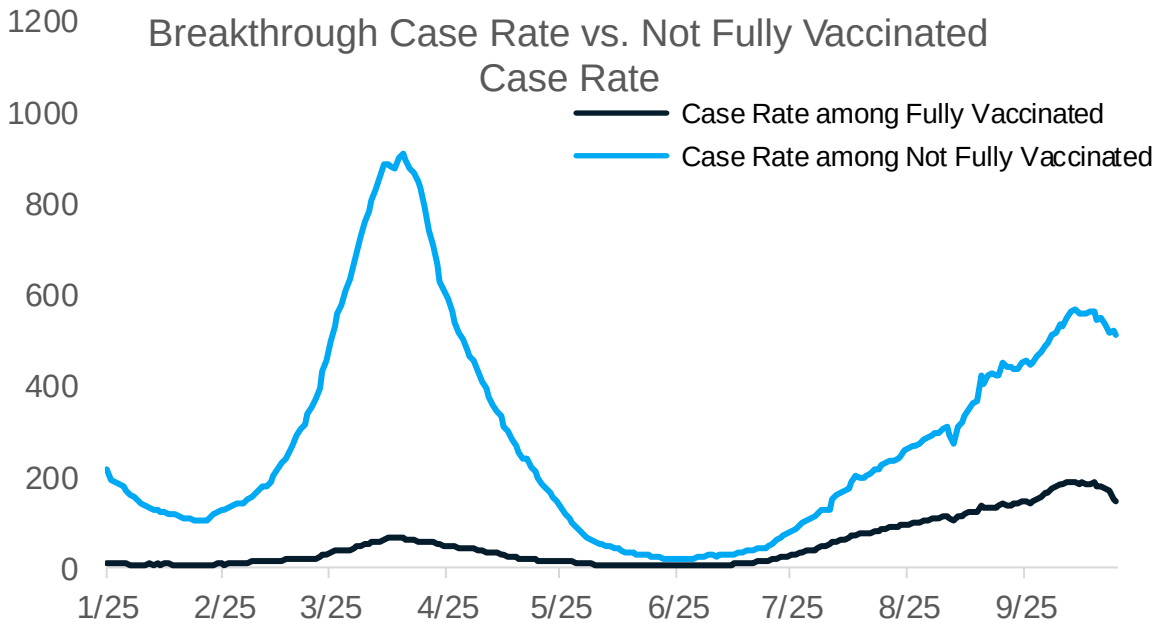
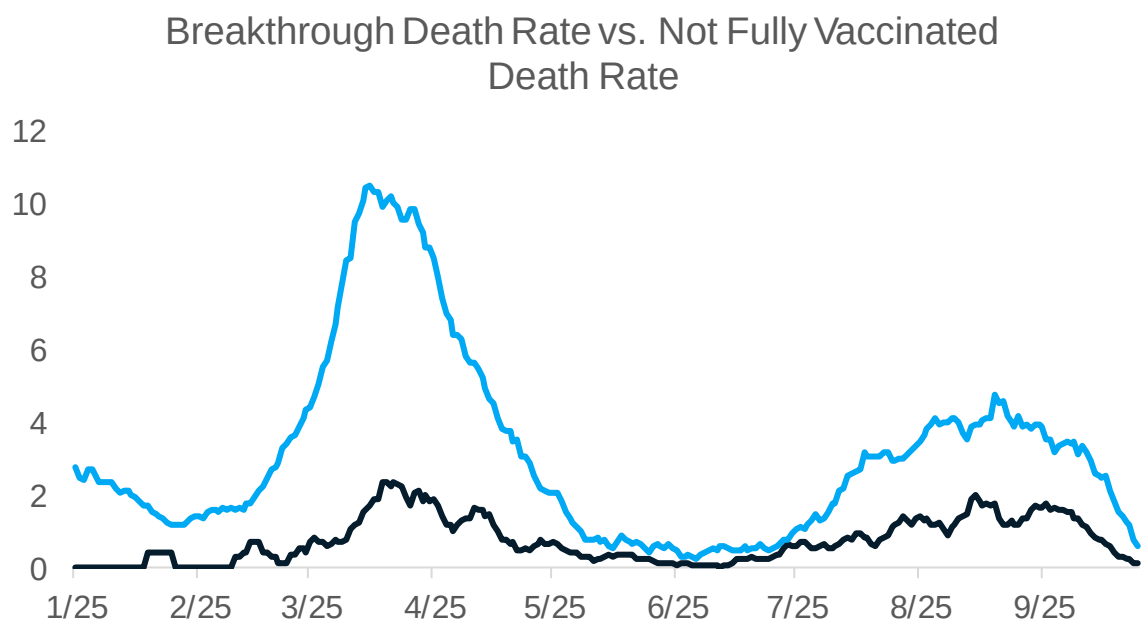


- As vaccine coverage increases, more cases will be vaccinated
- Until at 100% coverage, all cases are vaccinated
- However, the proportion of vaccinated people who get sick is much smaller than the proportion of unvaccinated people who get sick

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

Key Messages: Science Round Up

COVID-19 Variants and Genomic Sequencing

- Mutations to the existing Delta (B.1.617.2) variant have seen the emergence of *Delta Plus* variants (including sublineage AY.4.2)
- AY.4.2 is increasing in UK (17% faster than other variants)
- No concerns identified for vaccine effectiveness with AY.4.2
- We do not yet know other impacts of AY.4.2 on clinical relevance

Update to Testing Guidance for Fully Vaccinated

- Based on evolving evidence, CDC recommends fully vaccinated people get tested 5-7 days after close contact with a person with suspected or confirmed COVID-19

New Delta variant

US Variant Statistics (CDC):

- Delta
  - B.1.617.2 — <99% of US sequences
  - AY.1 — 0.1% of US sequences
  - AY.2 — 0% of US sequences
  - AY.4 —
    - AY.4.2 — <0.5% of US sequences

https://covid.cdc.gov/covid-data-tracker/#variant-proportions

UK Health Security Agency Technical Report 26

What we know:

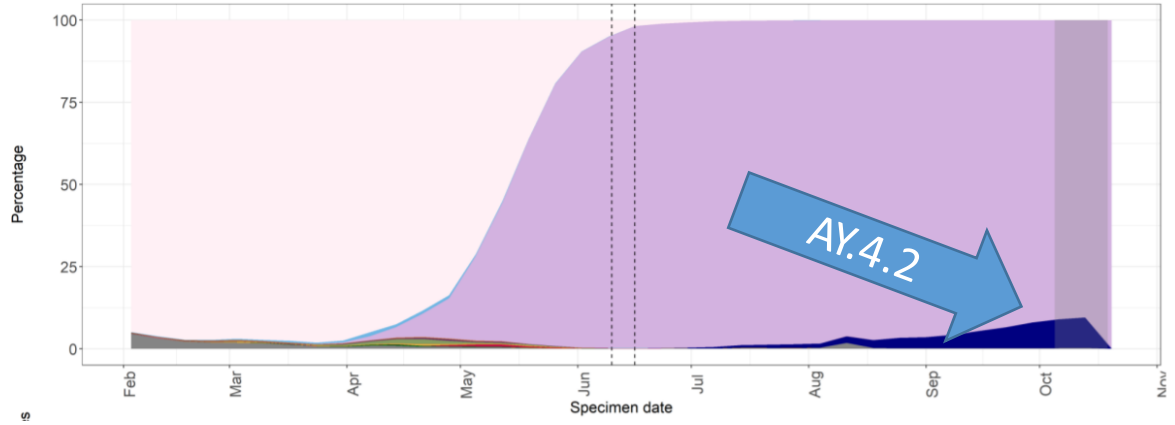
- AY.4.2 has Delta mutations plus additional changes
- Increasing in UK (17% faster than other variants)
- No concerns identified for vaccine effectiveness

What we don't yet know:

- Clinical relevance (Is this different from other Delta infections?)

UK Data showing slow increases in AY.4.2 (~6%):

Figure 4. Variant prevalence plot (all cases in England, genomic surveillance case definitions) as of 21 October 2021.
(Find accessible data used in this graph in underlying data.)



Update to Testing Guidance for Fully Vaccinated

- Fully vaccinated people with no COVID-like symptoms following an exposure to someone with suspected or confirmed COVID-19 should seek testing to ensure they are not infected
- Fully vaccinated people who have come into close contact with someone with COVID-19 should be tested 5-7 days following the date of their exposure and wear a mask in public indoor settings for 14 days or until they receive a negative test result
  - If test is positive, individuals should isolate
  - Regardless of result, fully vaccinated people who live in a household with someone who is immunosuppressed, at increased risk of severe disease, or unvaccinated (including children <12 years of age) could also consider masking at home for 14 days following a known exposure or until they receive a negative test result

- Most fully vaccinated people with no COVID-like symptoms do not need to quarantine or be restricted from work following an exposure to someone with suspected or confirmed COVID-19, if they follow the testing and masking recommendation above
- Fully vaccinated people should monitor for symptoms of COVID-19 for 14 days following an exposure

Source: CDC Interim Public Health Recommendations for Fully Vaccinated People