MI COVID RESPONSE DATA AND MODELING UPDATE

November 16, 2021

Executive Summary

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

Percent positivity (16.7%) is increasing (up from 14.1% last week)

Case rate (416.3 cases/million) is increasing for about 2 weeks (340.4 cases/million prior week)

Longer backfill times are impacting trend numbers and weekly comparisons for cases by onset date

In the last 7 days, no other state or territory reported more cases than Michigan (this week rank: highest; last week's rank: 2nd highest), and Michigan case rate is 8th highest nationally (8th highest last week)

Cases among pediatric populations < 12 years have increased 26% since last week

Percent of inpatient beds occupied by individuals with COVID (13.9%) is increasing for 17 weeks (up from 11.6 % last week)

Michigan has 3rd highest inpatient bed utilization (7th highest last week) and 12th highest adult ICU bed utilization (11th highest last week)

Daily pediatric hospital census has increased 33% since last week

Death rate (4.0 deaths/million) is decreasing for one week (4.4 last week). There were 280 COVID deaths between Nov 2-Nov 8

Michigan has the 12th highest number of deaths (19th highest last week), and T33rd highest death rate (42nd highest last week) in the last 7 days

7-day average **state testing rate** is increased to 4,233.0 tests/million/day. **Daily diagnostic tests (PCR)** is 42.2K per day, and the weekly average for PCR and antigen tests conducted in Michigan is 54.9K.

More than 12.1 million **COVID-19 vaccine** doses administered, 54.1% of the population is fully vaccinated (>5.39 million people)

67,421 administrations in 5- to 11-year-olds as of 11/16

SCIENCE ROUNDUP

Excess deaths during the COVID-19 Delta variant surge have been higher in the Southern U.S. compared to the Midwest

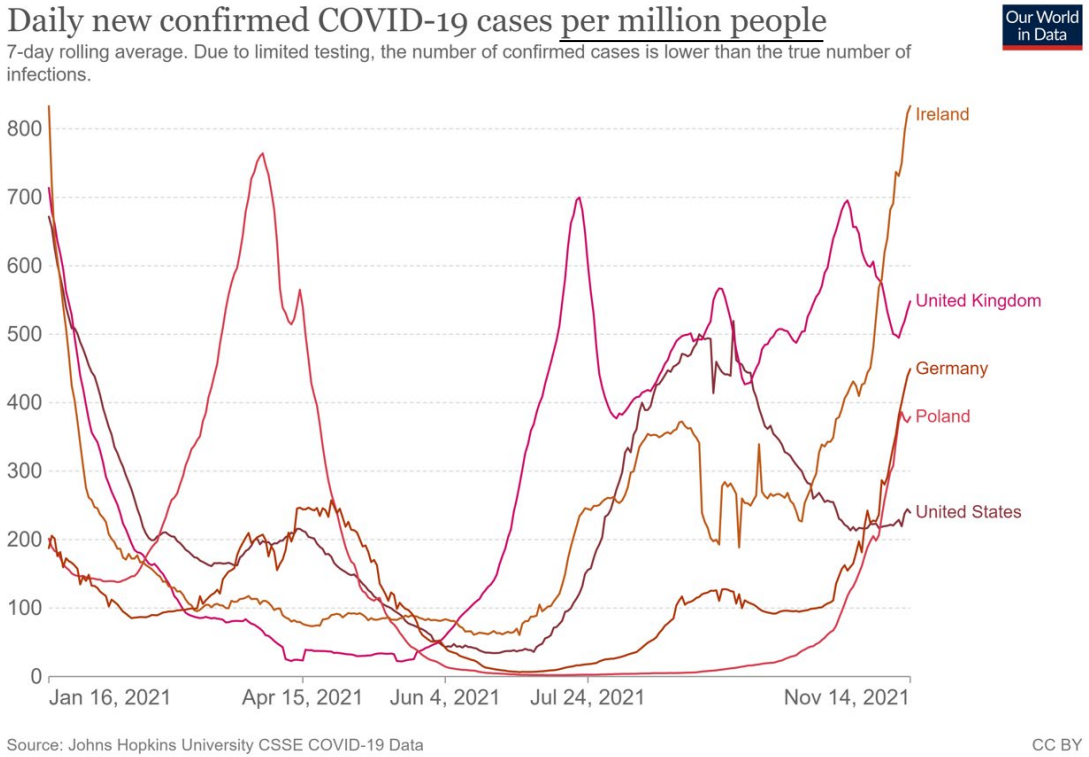
Hospital census has risen to spring peak levels and is negatively impacting hospitals

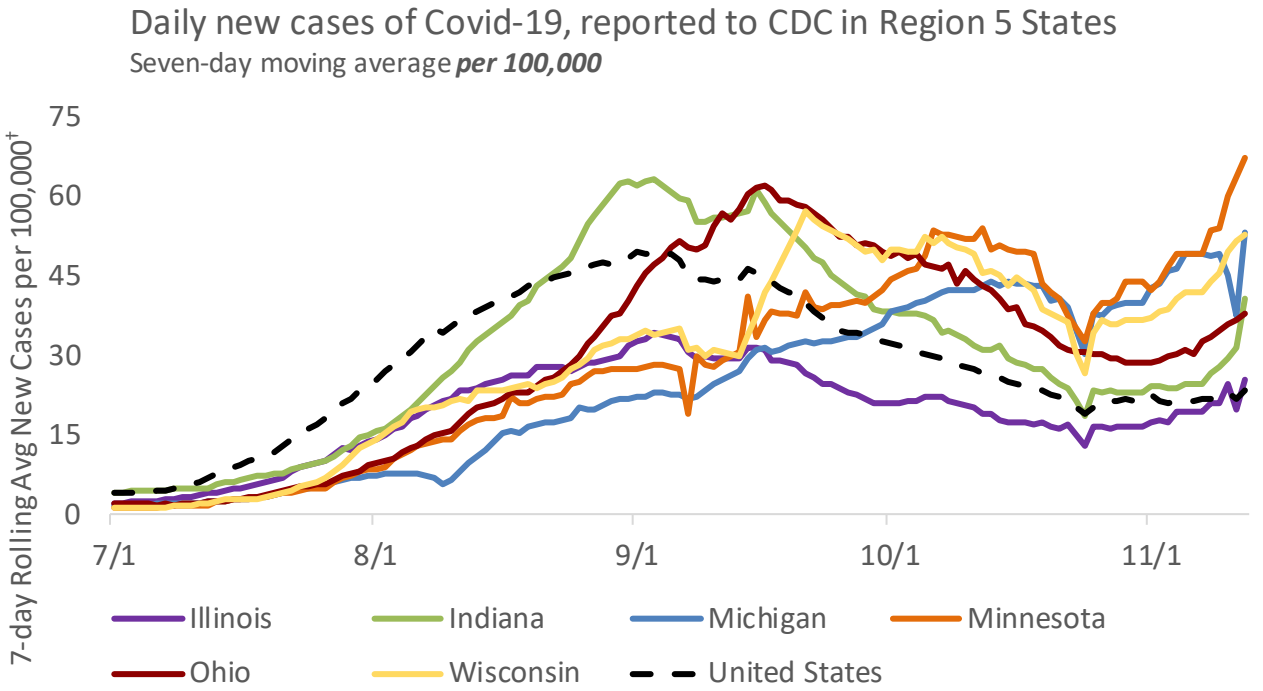
Holidays can be celebrated safer when following health recommendations

Vacuums of health measures not taken in some settings impact other settings where it is necessary to protect vulnerable populations

Global, National and Michigan Trends

Global and National Trends





Globally, 253,291,318 cases and 5,100,195 (Data* through 11/14/2021)

- European case rates are increasing rapidly; & several European countries introduced mitigation measures for unvaccinated individuals (Greece, Germany, Italy, Austria)

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

- The U.S. is at High transmission level (170.4 cases/100,000 in last 7 days) with 51 states/territories in Substantial or High transmission

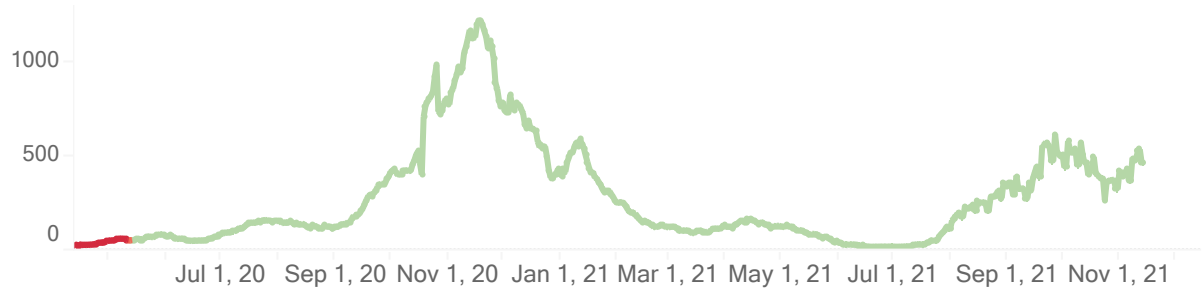
Midwest states maintain High transmission levels† and are increasing

- Minnesota has highest case rate; Indiana, **Michigan**, Ohio and Illinois seeing fastest increases

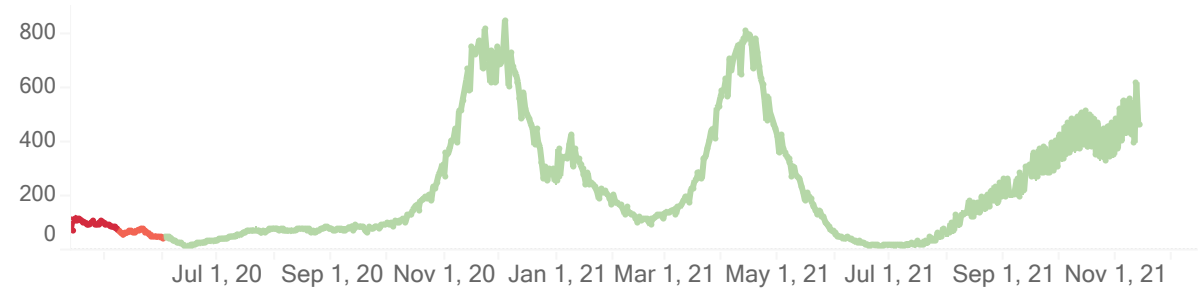
Source: *Johns Hopkins Coronavirus Resource Center; ¶ CDC COVID Data Tracker Weekly Review; † CDC COVID Data Tracker – CDC recently updated their methodology for reporting case rates

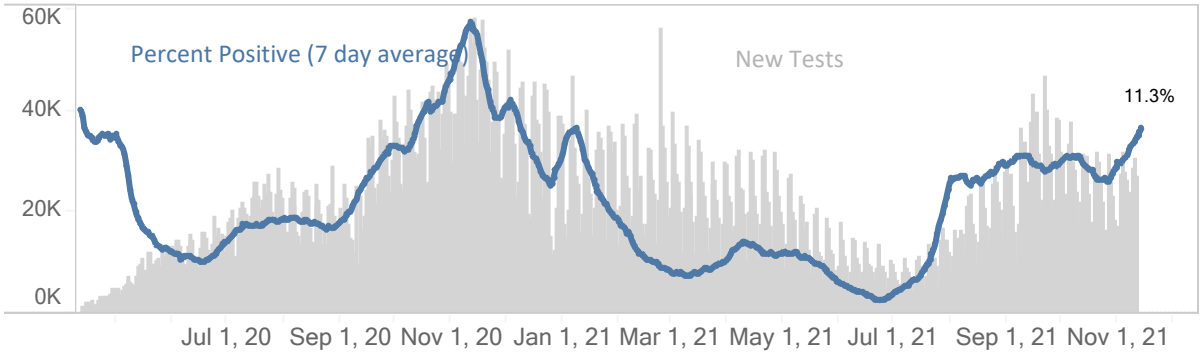
State Comparisons: Wisconsin and Michigan

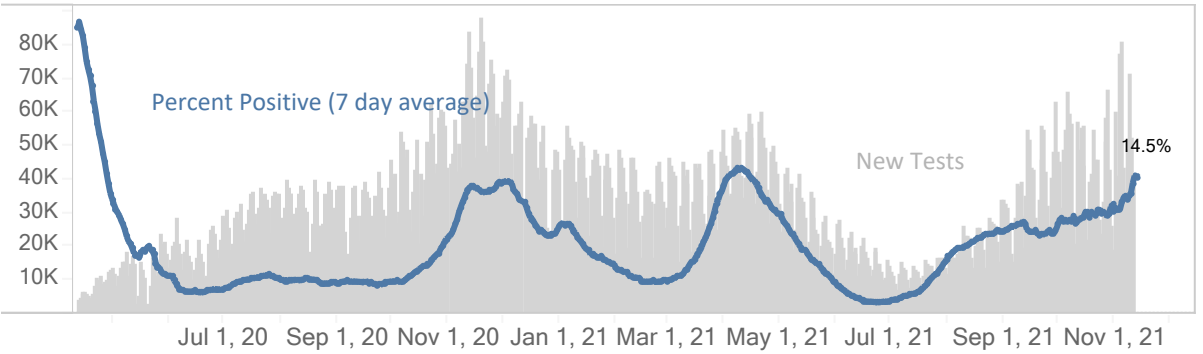
Wisconsin Confirmed New Cases / 1M (7 days average)

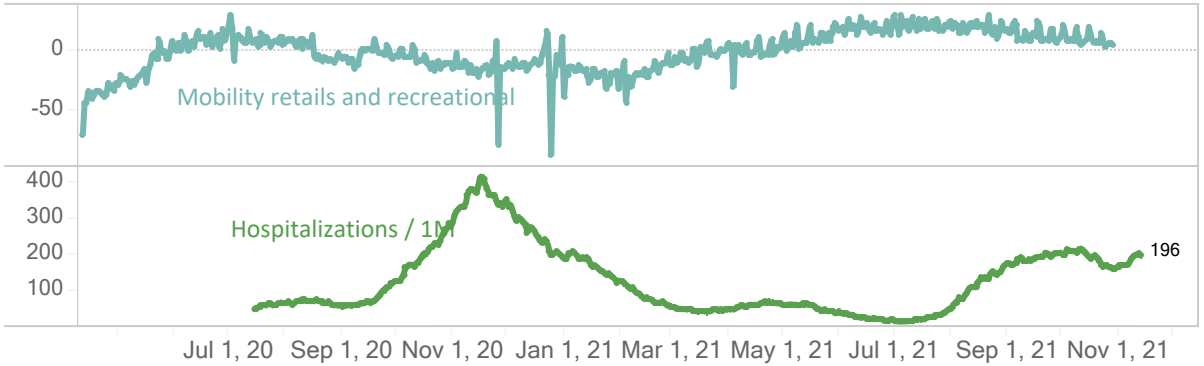


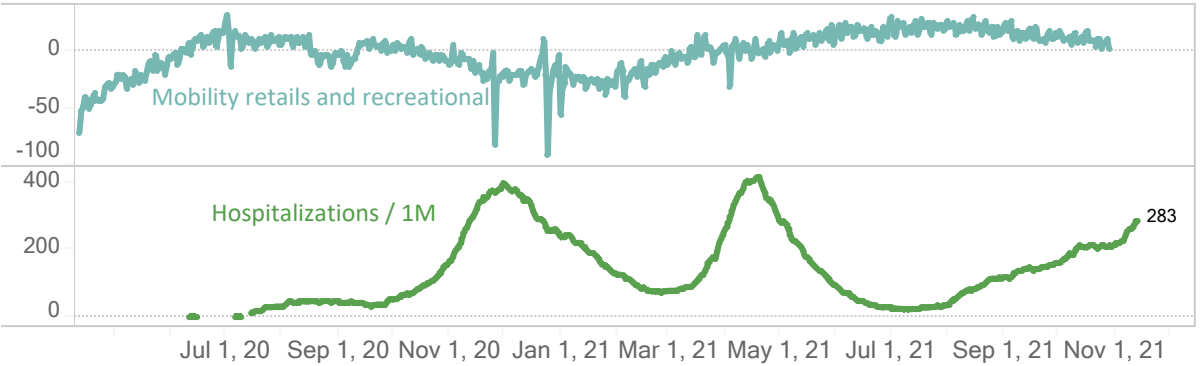
Michigan Confirmed New Cases / 1M (7 days average)





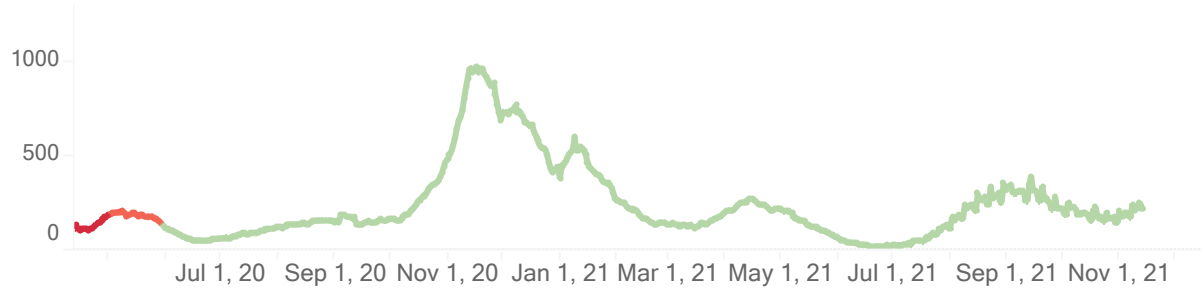


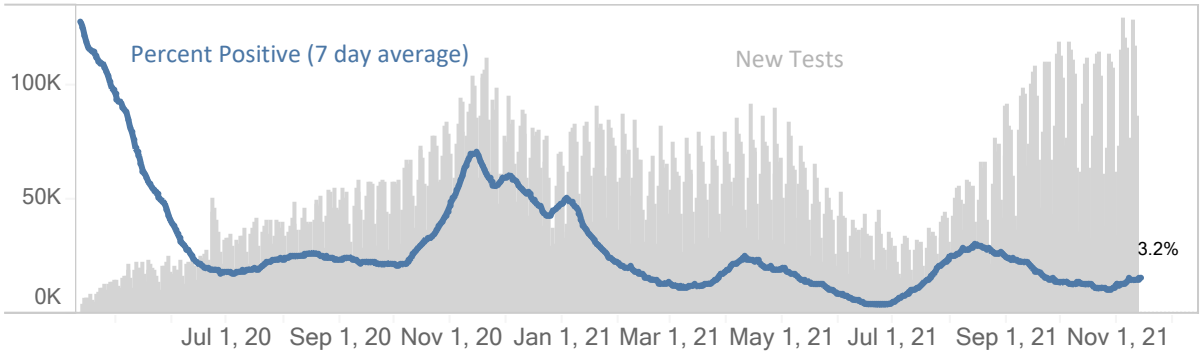


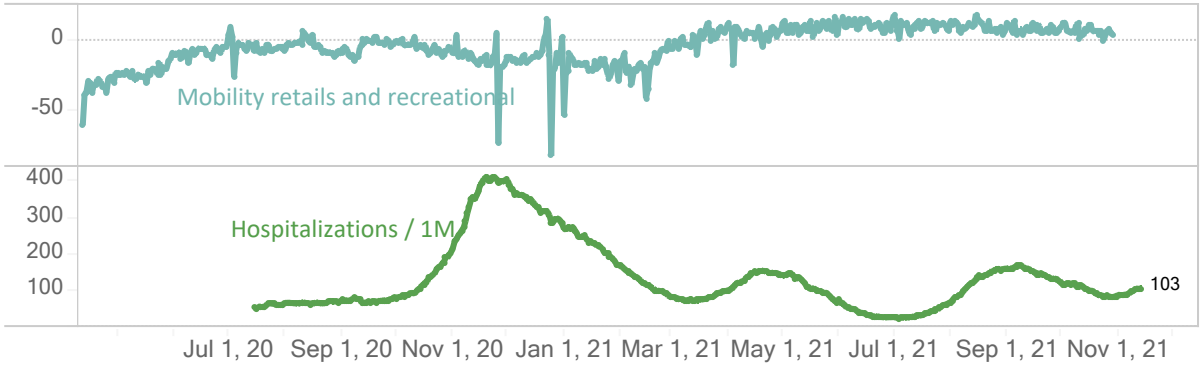


State Comparisons: Illinois and Minnesota

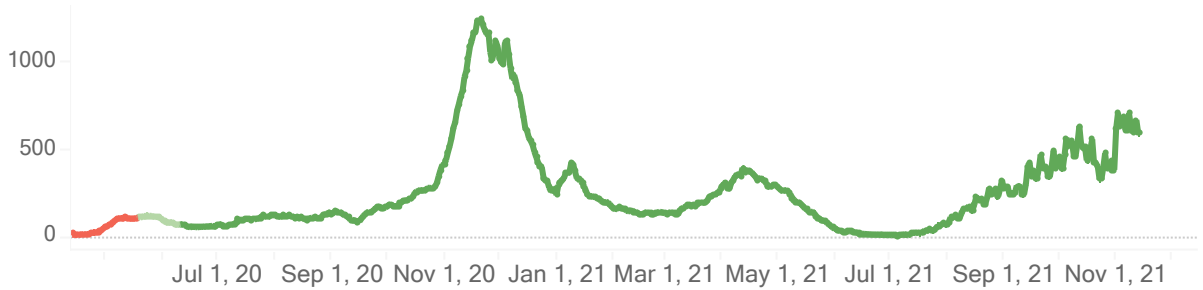
Illinois Confirmed New Cases / 1M (7 days average)

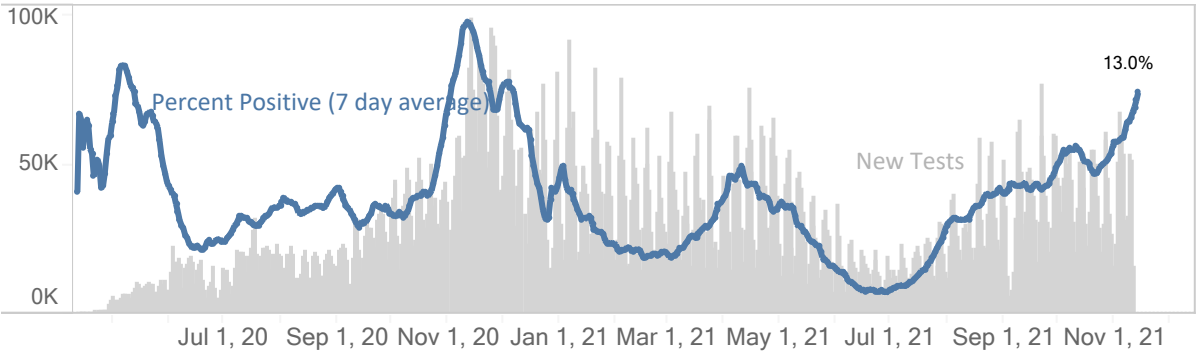


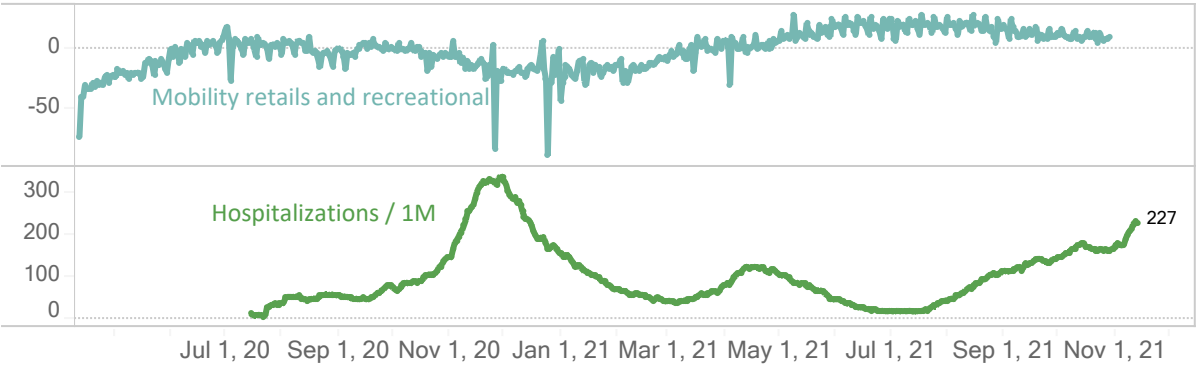




Minnesota Confirmed New Cases / 1M (7 days average)

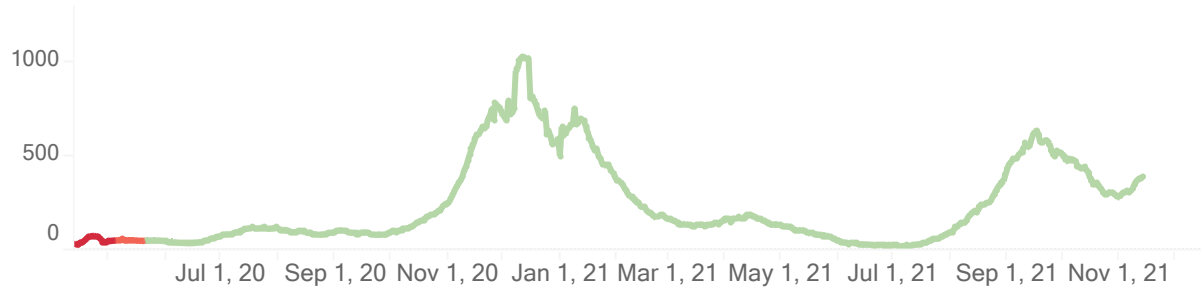




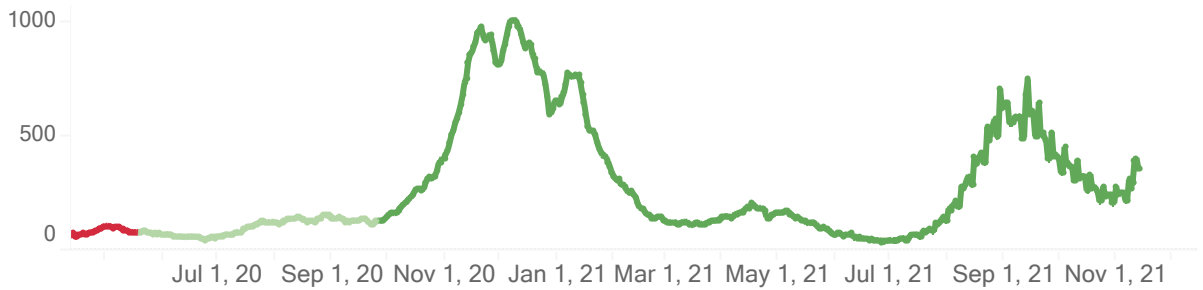


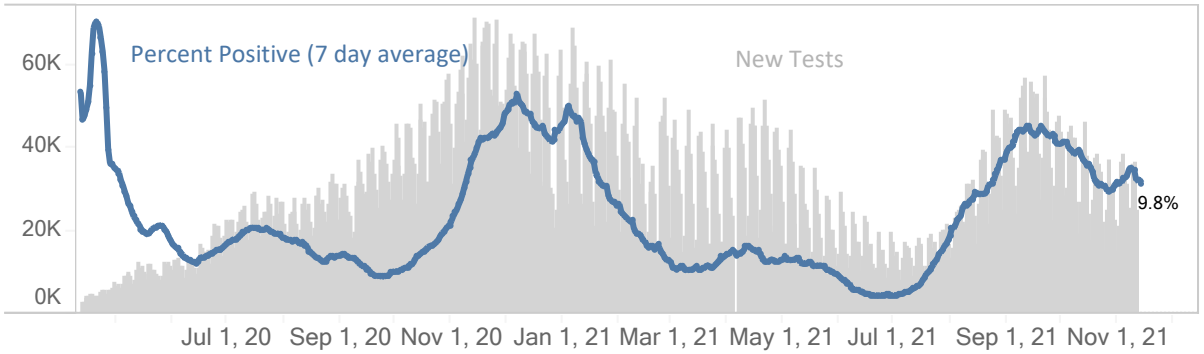
State Comparisons: Ohio and Indiana

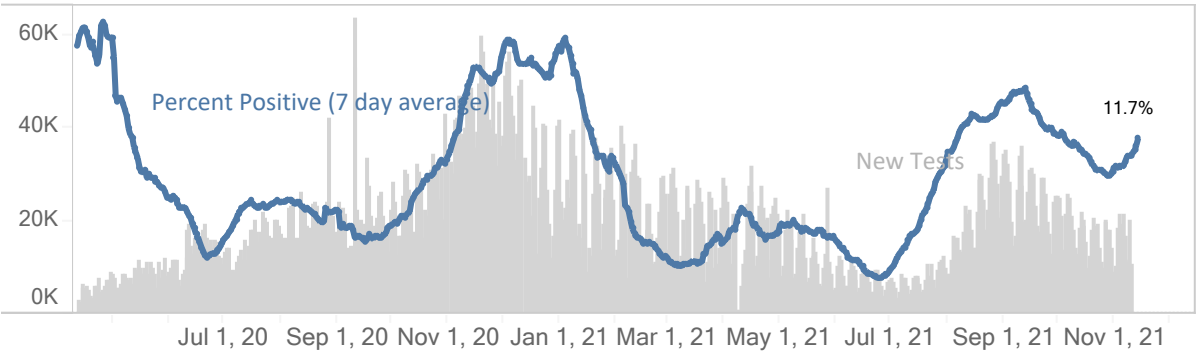
Ohio Confirmed New Cases / 1M (7 days average)

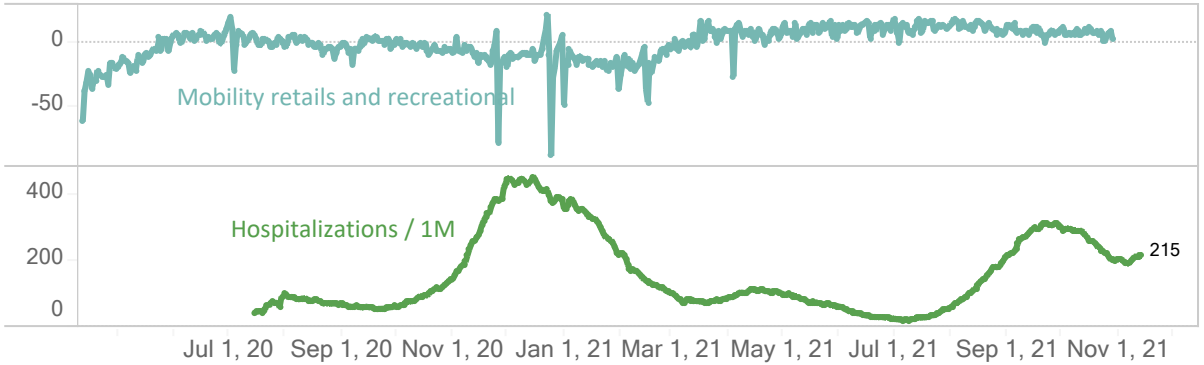


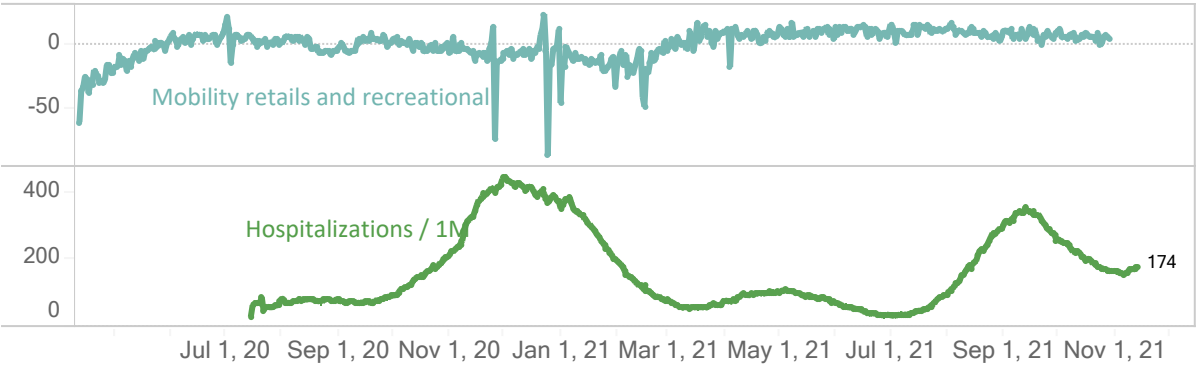
Indiana Confirmed New Cases / 1M (7 days average)











Key Messages: All COVID-19 Transmission Metrics Increasing

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

Statewide positivity is 16.7% (last week: 14.1%)

- The trend is increasing for 3 weeks
- Positivity is increasing in all MERC regions
- Positivity in seven regions is above 15% and four regions are above 20%

Case rate has increased to 416.3 cases/million (last week: 340.4 cases/million)

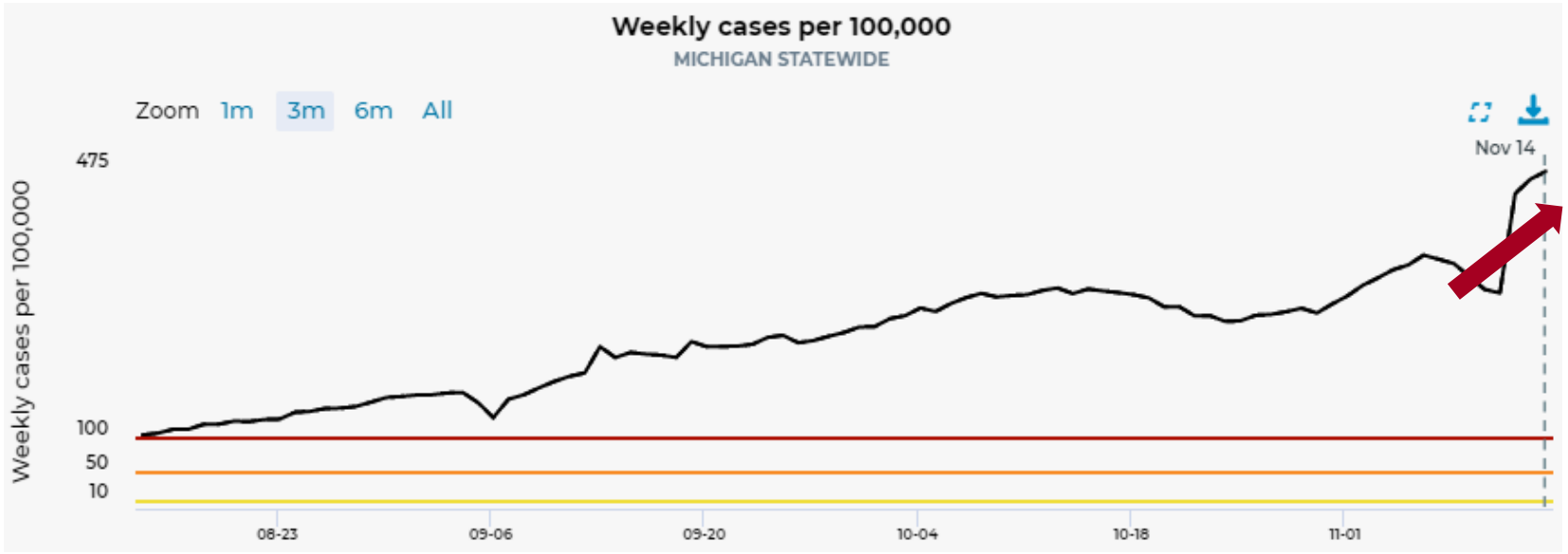
- Cases per million are at elevated incidence growth in all MERC regions
- Cases per million are increasing among all age groups
- 10-19-years-olds are experiencing the greatest case burden (742.7 daily cases; 591.8 cases/mil)
- Approximately 1.5% of people who were fully vaccinated have been reported with a breakthrough infection

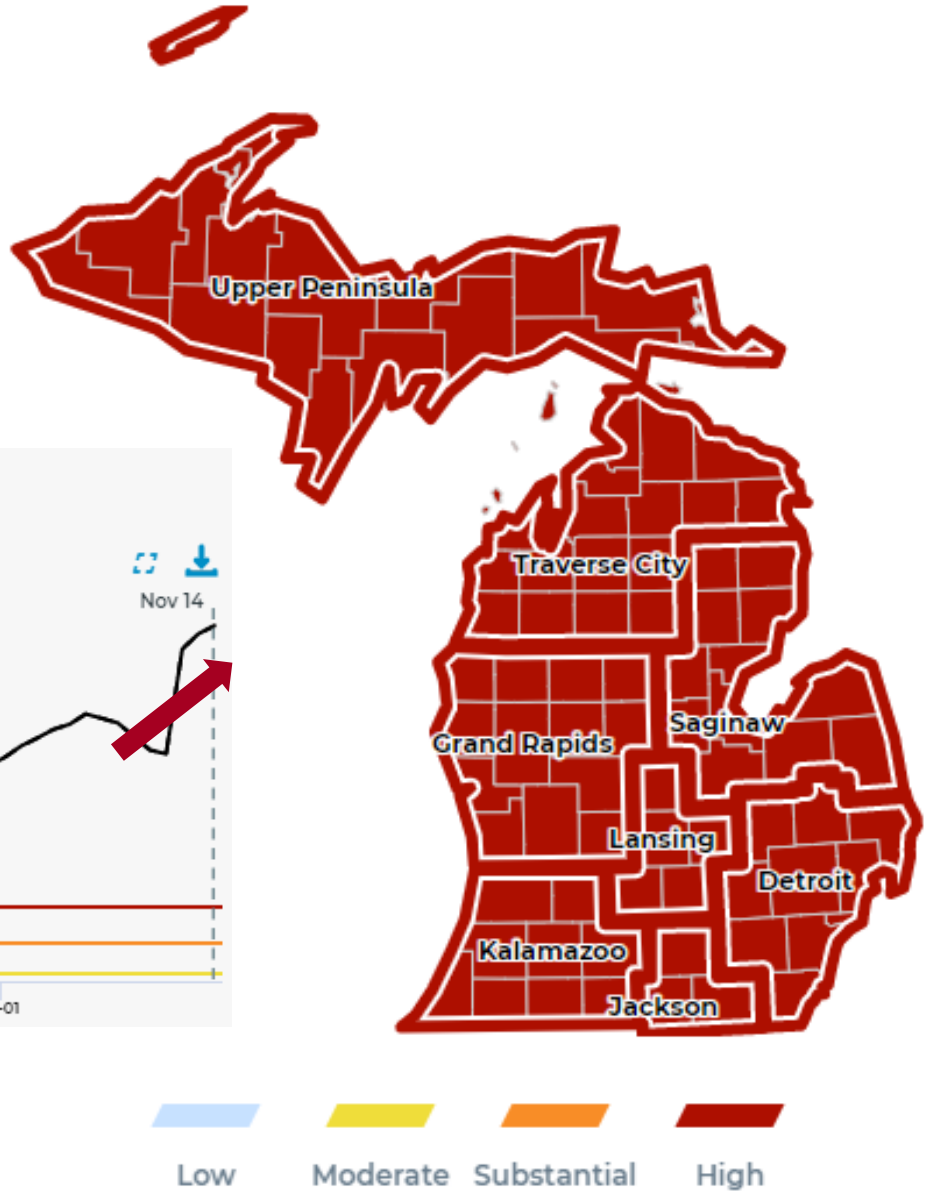
Number of active outbreaks is up 6% from last week

- 162 new outbreaks were identified in the past week, which is down from 181 new outbreaks reported last week
- K-12 reported the most total outbreaks and clusters (480) and new outbreaks (86) this week
- Change in outbreak reporting coming next week

Michigan at High Transmission Level

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

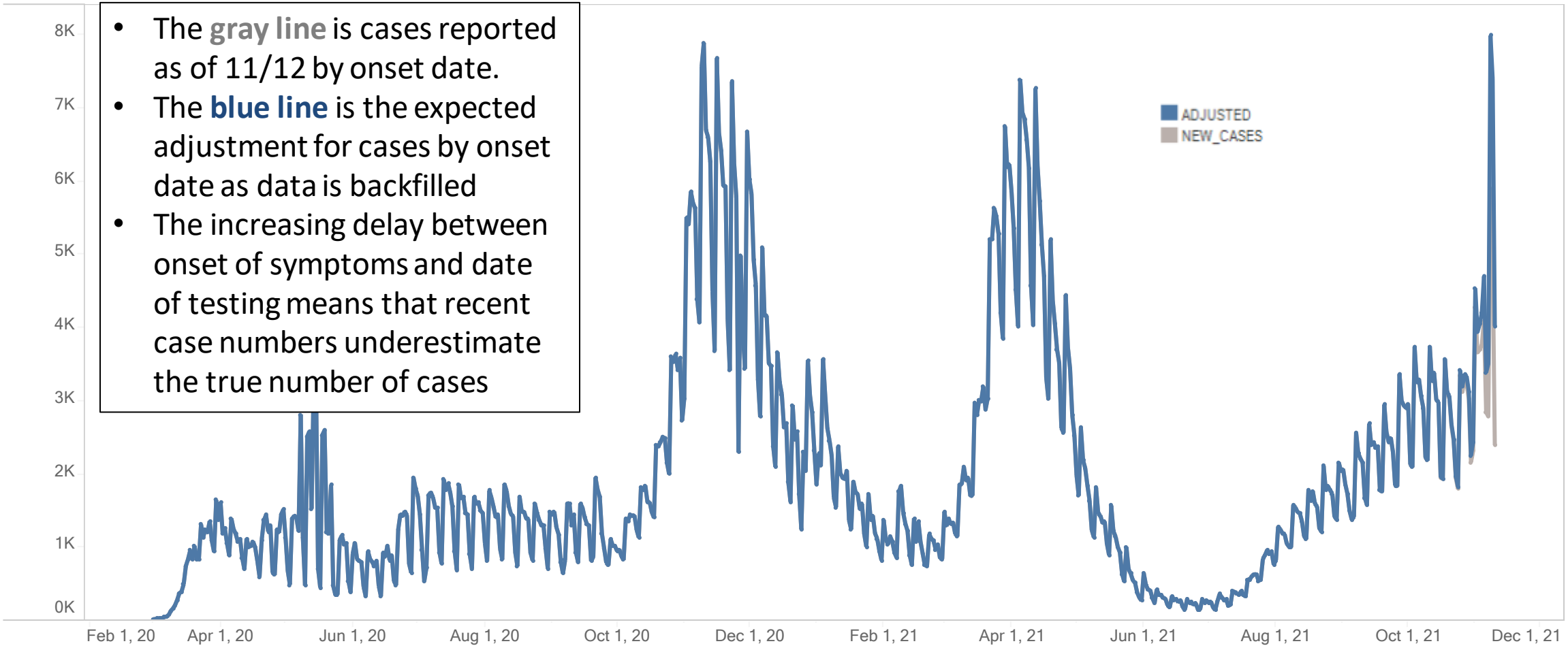




- Most recent data using referral date show increases in case trends (red arrow)
- Recent dip was due to a temporary lab processing error that has been resolved

Michigan Lag-adjusted new COVID cases by onset date

New confirmed cases by onset actual and adjusted as of November 12, 2021 (-2 days)



- The **gray line** is cases reported as of 11/12 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

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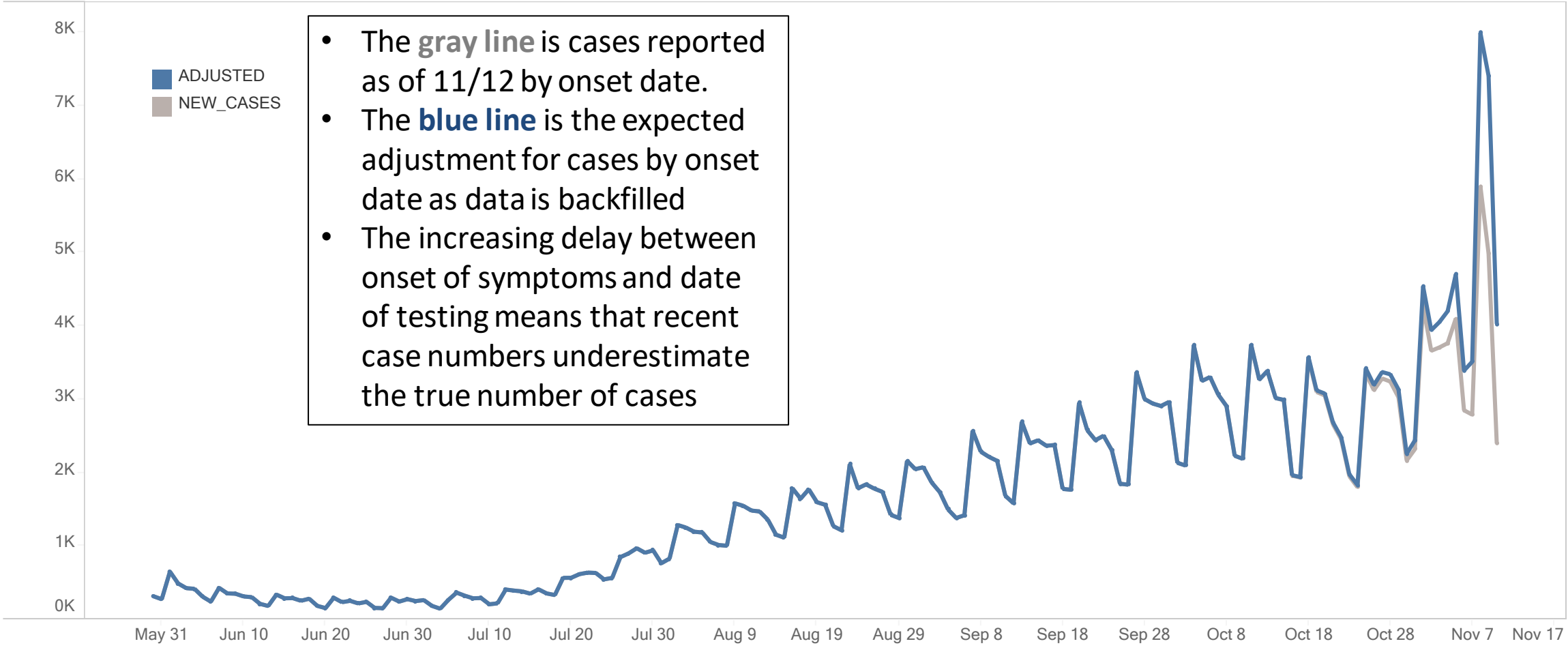

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Confirmed and probable case indicators

Table Date: 11/15/2021 (7 days from date table was produced: 11/8/2021)

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	359.3	elevated incidence growth	13.3	Increase - 3wk	4398.5	12.1	Increase - 17wk	3.1	Decrease - 1wk
Grand Rapids	High	476.6	elevated incidence growth	22.9	Increase - 3wk	4541.2	17.5	Increase - 3wk	5.1	Increase - 1wk
Kalamazoo	High	400.9	elevated incidence growth	19.2	Increase - 3wk	3649.6	15.9	Increase - 2wk	2.8	Decrease - 2wk
Saginaw	High	498.3	elevated incidence growth	20.6	Increase - 3wk	3338.7	14.3	Increase - 2wk	8.4	Increase - 1wk
Lansing	High	517.6	elevated incidence growth	19.2	Increase - 3wk	3726.1	17.2	Increase - 2wk	4.1	<20 wkly deaths
Traverse City	High	504.9	elevated incidence growth	20.3	Increase - 2wk	3016.4	15.9	Increase - 1wk	6.1	Decrease - 1wk
Jackson	High	575.7	elevated incidence growth	22.5	Increase - 20wk	4310.9	26.8	Increase - 1wk	3.8	<20 wkly deaths
Upper Peninsula	High	498.9	elevated incidence growth	17.5	Increase - 2wk	3098.8	11.8	Increase - 2wk	6.1	<20 wkly deaths
Michigan	High	416.3	elevated incidence growth	16.7	Increase - 3wk	4233.0	13.9	Increase - 17wk	4.0	Decrease - 1wk

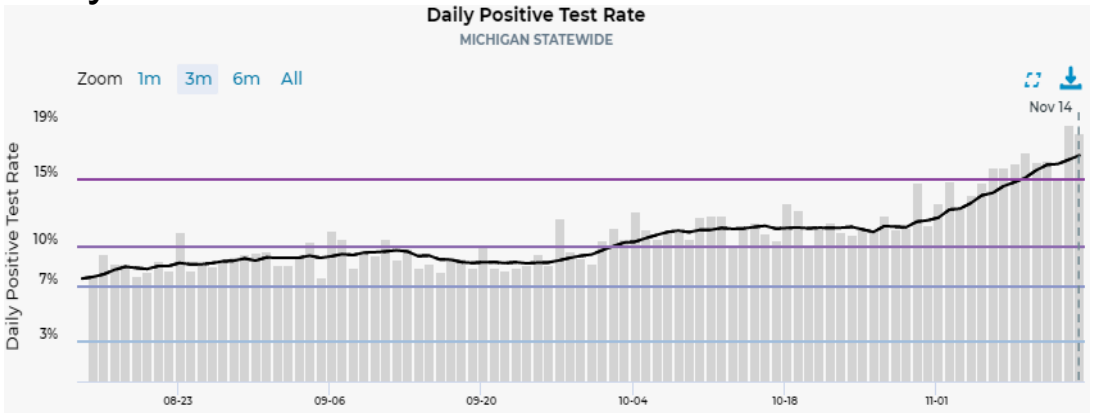
Cases Low: <7 | A: 7-20 | B: 20-40 | C: 40-70 | D: 70-150 | E: >=150

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

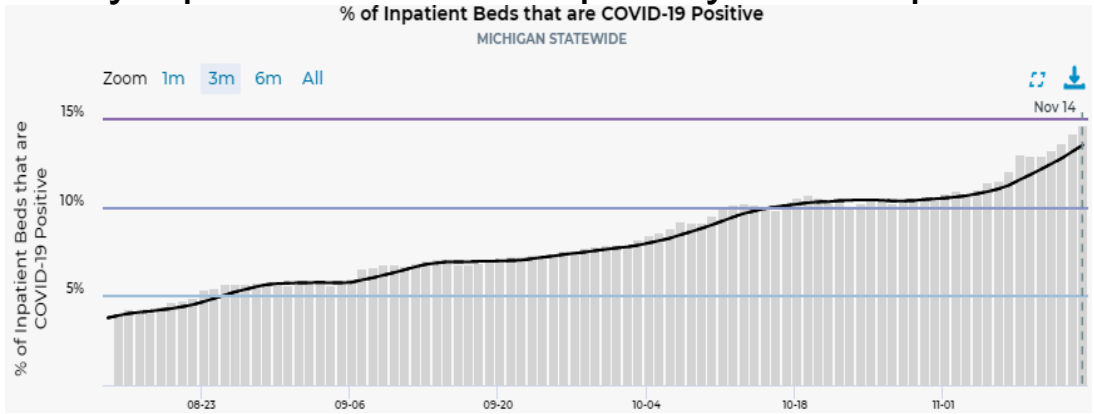
Time Trends – Positivity, Case Rates, Hospitalizations, Deaths

- Core COVID-19 indicators show that transmission is increasing, and burden remains high in Michigan

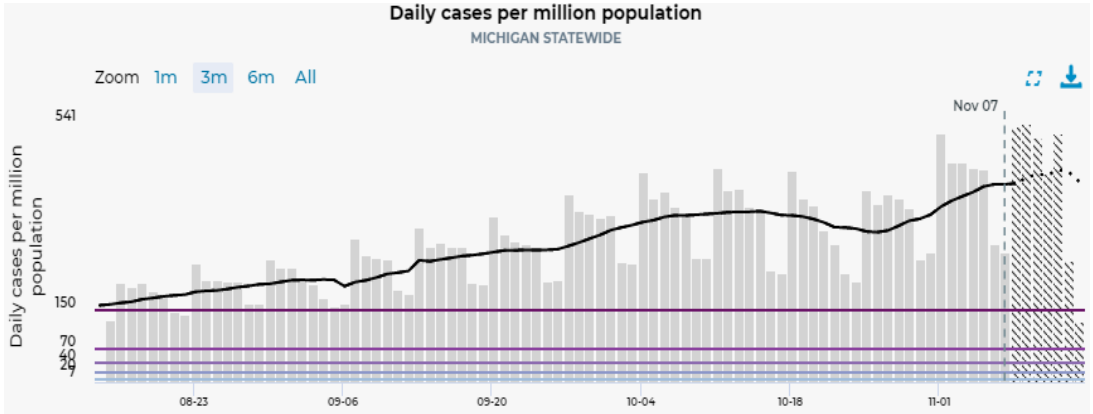
Daily Positive Test Rate



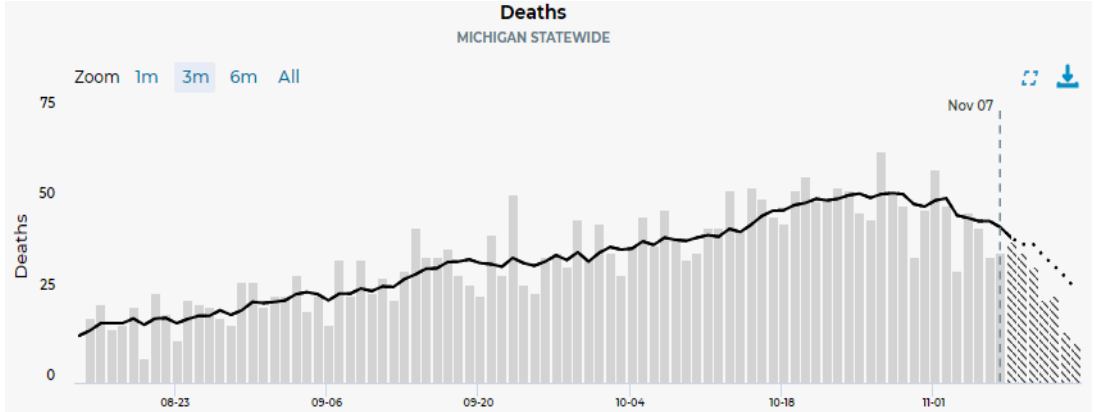
Daily Inpatient Beds Occupied by COVID patients



Daily Case Rate

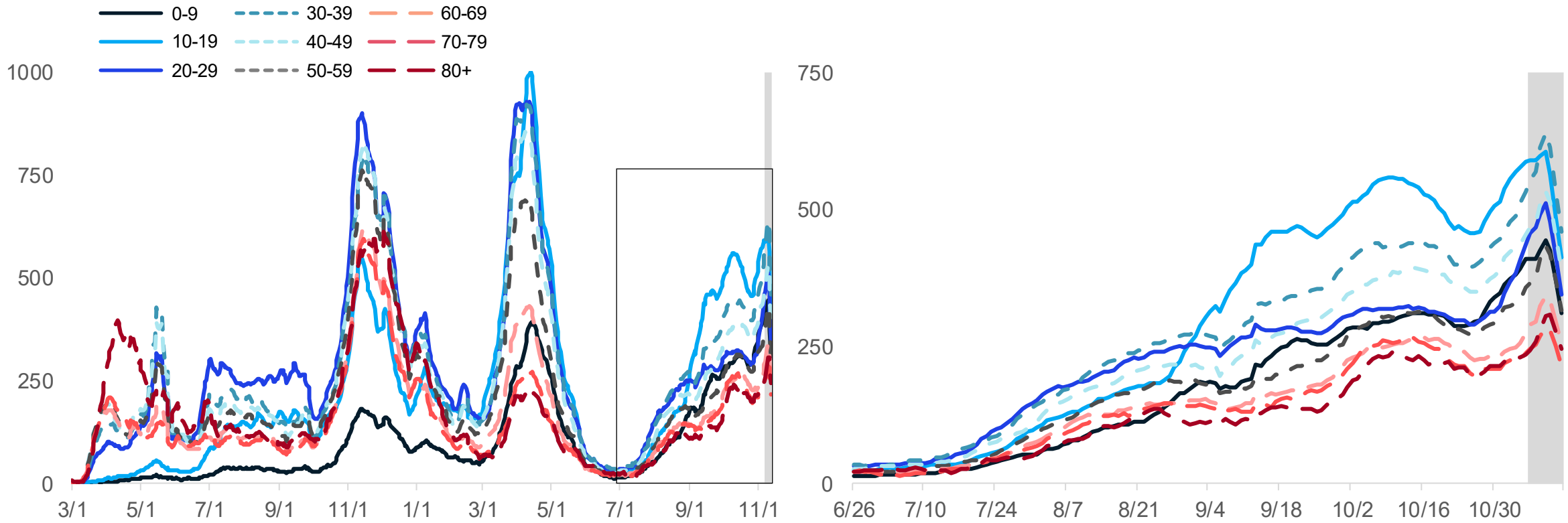


Daily Deaths



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 increasing
- Case rates by onset date for all age groups are between 235 and 590 cases per million (through 11/8)
- Case rates remain highest for 10-19-year-olds, but cases for 20-29 saw the largest one-week growth

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 Nov 15

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	494.6	**429.0**	+16% (+70)
10-19	**742.7**	**591.8**	**+8% (+57)**
20-29	590.9	**428.3**	+22% (+107)
30-39	650.9	**536.5**	+15% (+87)
40-49	534.1	**452.9**	+9% (+44)
50-59	479.0	354.7	+10% (+42)
60-69	361.7	283.5	+17% (+52)
70-79	180.0	234.7	+6% (+10)
80+	102.0	246.3	+10% (+9)
Total¶	**4160.4**	**416.3**	**+13% (+482.7)**

† 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 (742.7) and avg. daily case rate (591.8 case/mil) are highest for those aged 10-19
- One week change is highest for 20-29 (+22%, +107)
- Case rates for all age groups under 50 are higher than the state
- 52-week low case rates were on June 26, 2021

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	48848	324.1	440.6	26.9	23.7	0.0	0.00
Grand Rapids	230120	350652	18058	124.0	538.8	15.0	42.8	0.1	0.03
Kalamazoo	140422	214801	9410	71.0	505.6	2.4	11.2	0.0	0.00
Saginaw	78759	122834	6162	47.3	600.6	0.3	2.4	0.0	0.00
Lansing	78140	119915	5910	50.4	645.0	3.3	27.5	0.0	0.03
Traverse City	53099	83462	3158	32.7	615.8	0.1	1.2	0.0	0.00
Jackson	41274	64091	3166	28.9	700.2	0.3	4.7	0.0	0.00
Upper Peninsula	34645	53875	3218	25.6	738.9	0.0	0.0	0.0	0.00
Michigan	1391988	2143877	98030	704.4	506.0	48.3	22.5	0.1	0.07

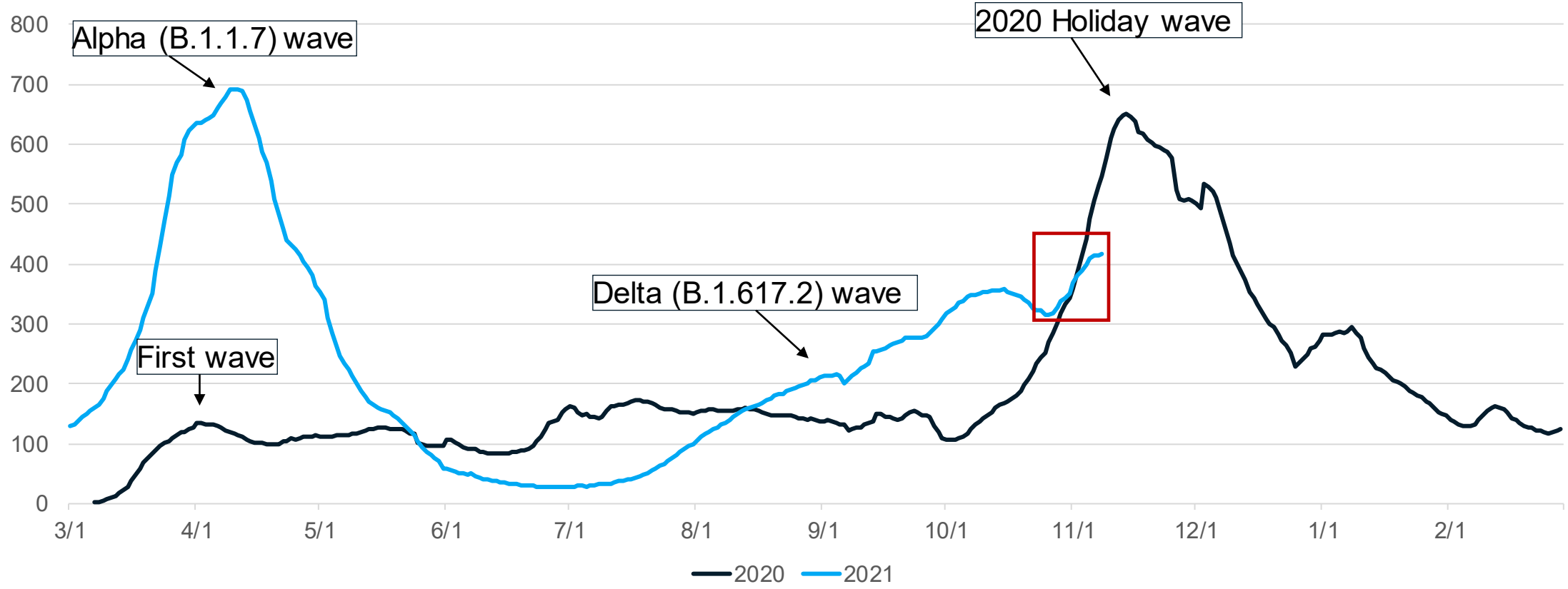
- Each day more than 704 children under age 12 become infected with COVID-19, 145 more than last week
- Pediatric case rates increased to 506.0 cases/million (last week: 401.7 cases/million)
- Pediatric (<18) hospital census* is averaging approximately 48 per day (last week: 36 per day)

Note: Data as of 11/15; case data 11/8, hospitalization data 11/15. Hospitalization data is for pediatric patients (<18); * includes only confirmed COVID-19

Time Trends – Annual Comparison

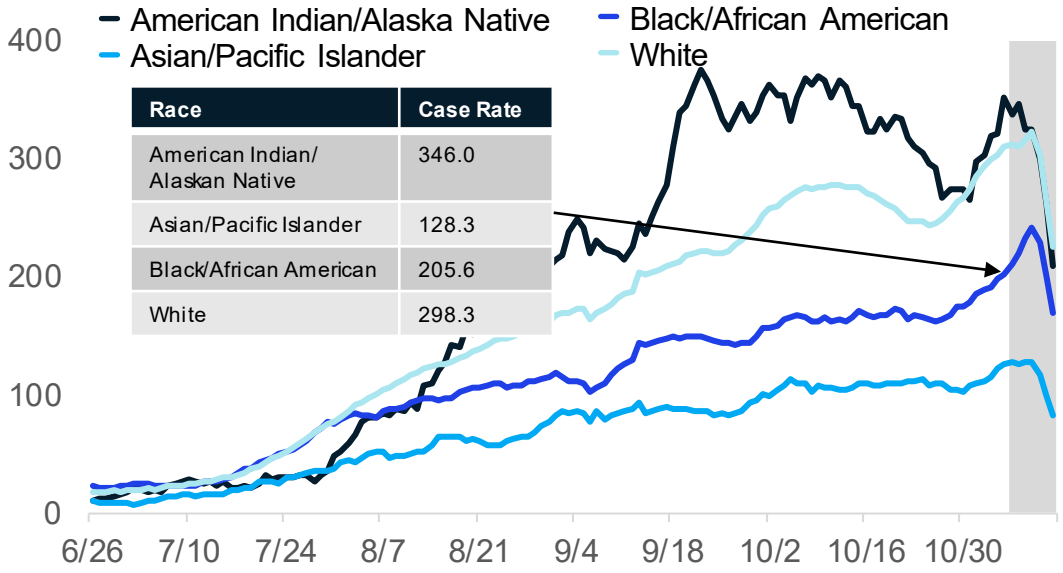
- Case rates are now at the same level as this time last year.
- Trend is now roughly following the same trajectory of the exponential curve we experienced as last fall.

7- day rolling average of Rates 2020 vs 2021



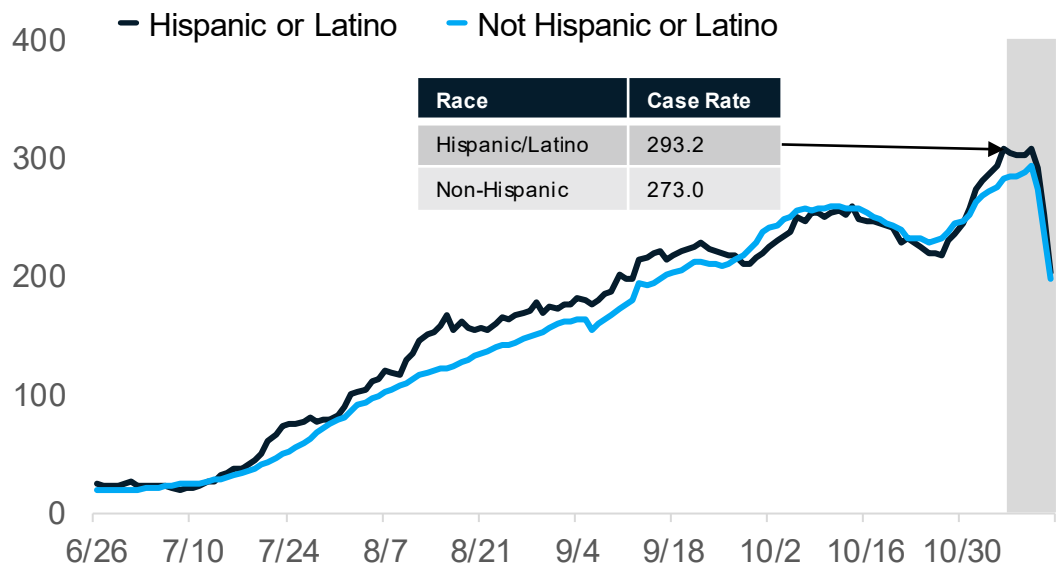
Case Rates by Reported Racial and Ethnic Group

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



Race	Case Rate
American Indian/ Alaskan Native	346.0
Asian/Pacific Islander	128.3
Black/African American	205.6
White	298.3

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



Race	Case Rate
Hispanic/Latino	293.2
Non-Hispanic	273.0

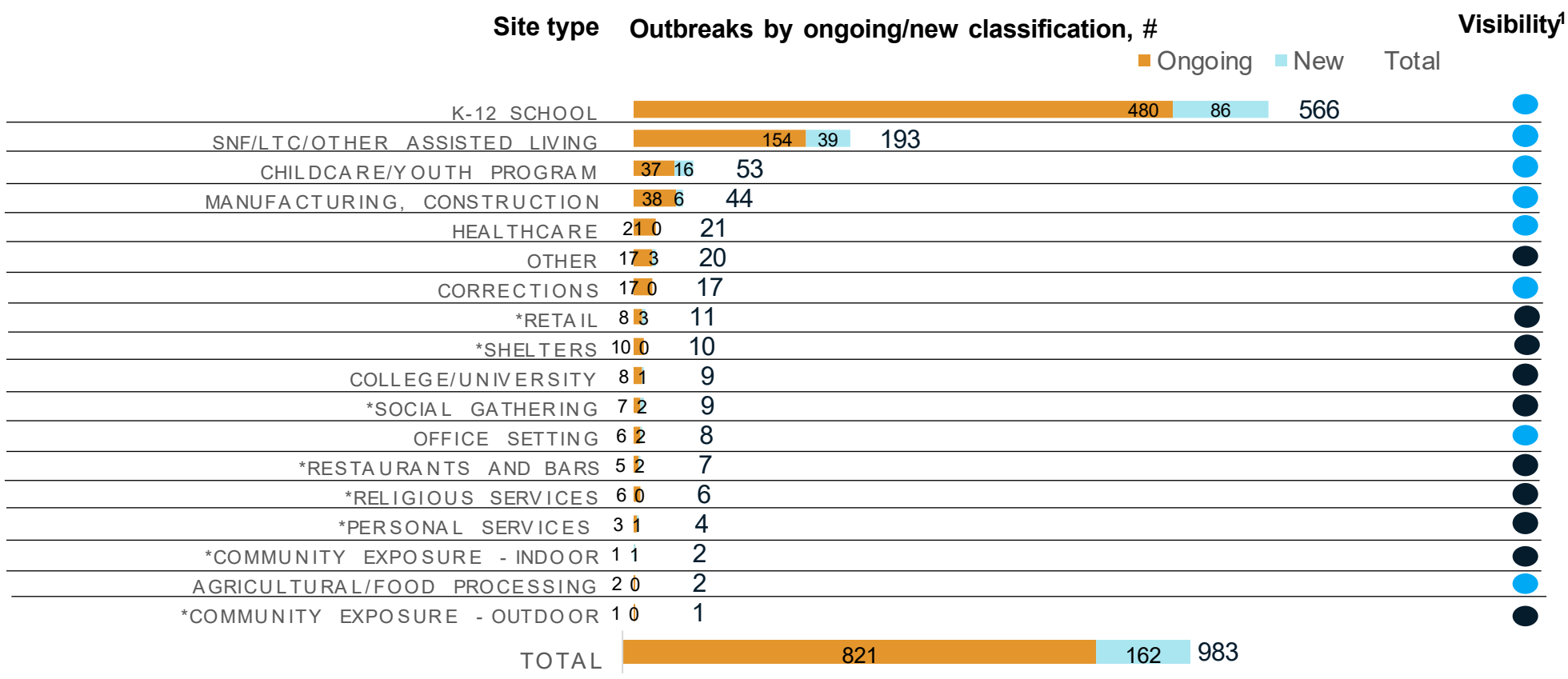
Updates since last week:

- Cases per million are increasing for all reported racial and ethnic groups, but the delay in reporting is impacting trend analysis
- **American Indian/Alaskan Native have the highest case rates**
- The high number of cases with missing race/ethnicity data, and those multiracial or other are also impacting the case rates shown here
- In the past 30 days, 25% (↑1%) of race data and 33% (↑3%) 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

Number of Weekly Reported Outbreaks: *Transitioning Next Week*

Number of outbreak investigations by site type, week ending Nov 10



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 6%** from previous week, with 162 new outbreaks identified

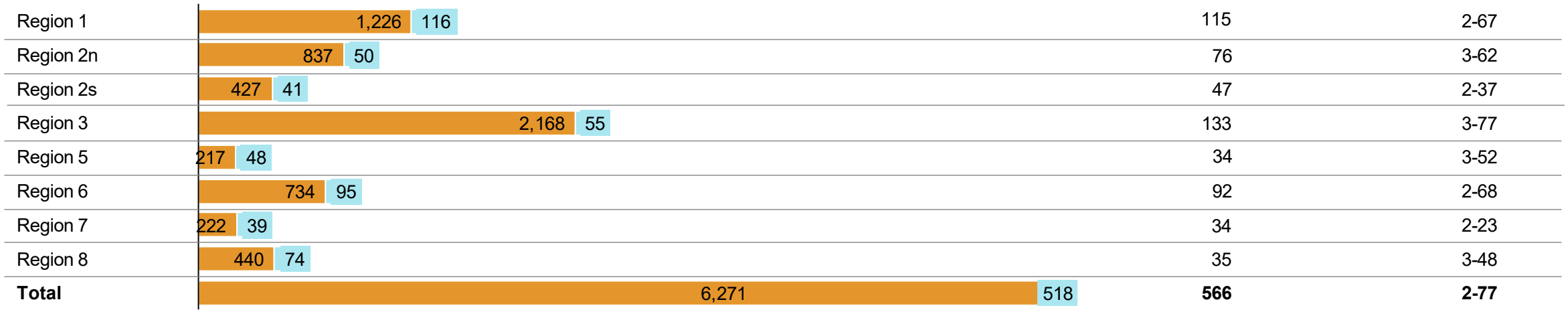
One less reporting day this period due to the holiday

K-12 schools reported the greatest number of new outbreaks and clusters (86) this week.

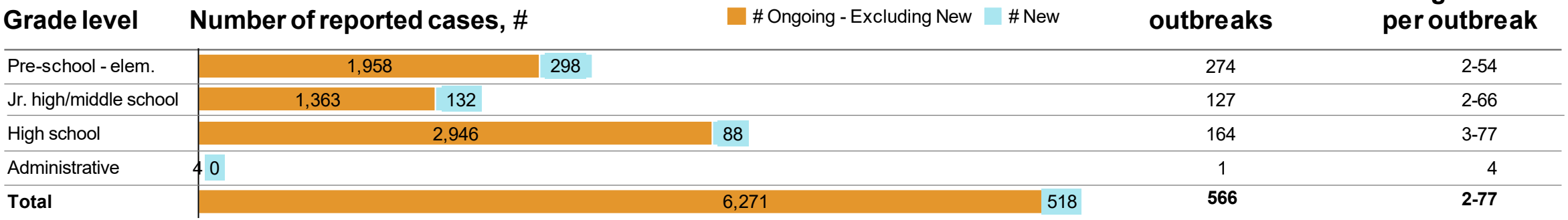
The next greatest number of new outbreaks was among SNF/LTC (39), followed by childcare/youth programs (16) manufacturing/construction (6), and 8 other settings with at least 1 new outbreak in the last week.

K-12 school clusters and outbreaks, recent and ongoing, week ending Nov 10

Number of reported outbreaks/clusters increased since last week (532 to 566), with increases in Pre K-Elementary (252 to 274), Middle/Jr High (118 to 127), and High Schools (160 to 164). Administration outbreaks/clusters decreased (2 to 1).



Region	Number of reported cases, #		Number of outbreaks	Range of cases per outbreak
Region 1	1,226	116	115	2-67
Region 2n	837	50	76	3-62
Region 2s	427	41	47	2-37
Region 3	2,168	55	133	3-77
Region 5	217	48	34	3-52
Region 6	734	95	92	2-68
Region 7	222	39	34	2-23
Region 8	440	74	35	3-48
Total	6,271	518	**566**	**2-77**

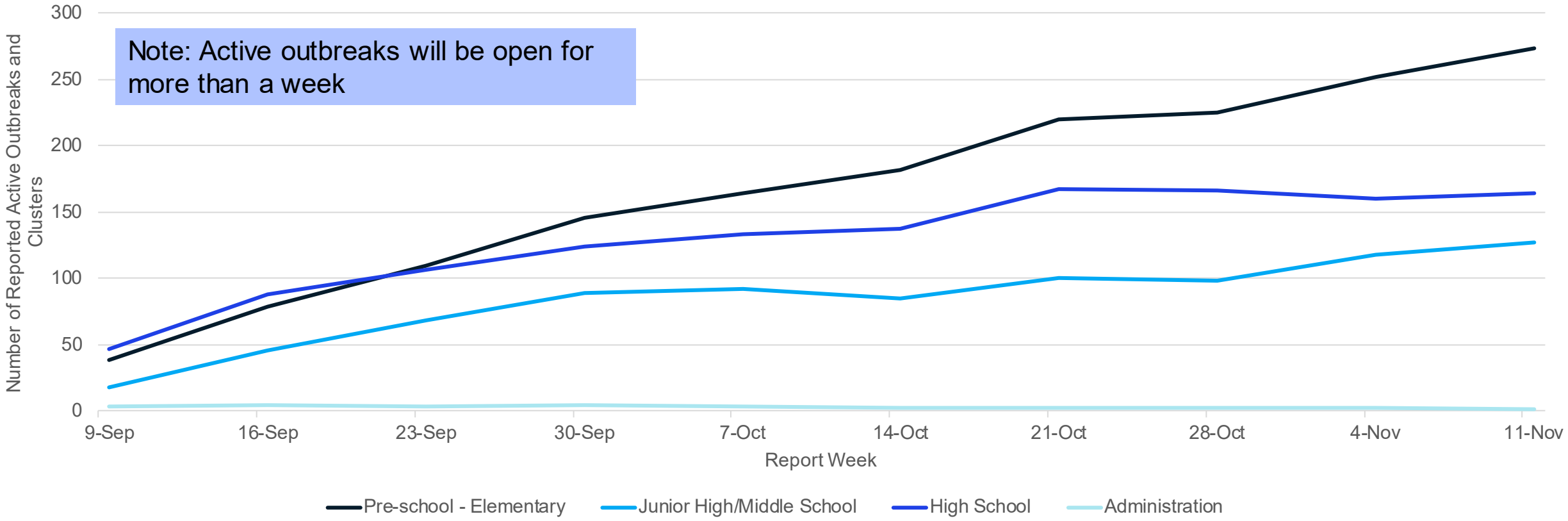


Grade level	Number of reported cases, #		Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	1,958	298	274	2-54
Jr. high/middle school	1,363	132	127	2-66
High school	2,946	88	164	3-77
Administrative	4	0	1	4
Total	6,271	518	**566**	**2-77**

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

Number of Active Outbreaks Over Time within K-12 Settings



Updates since last week:

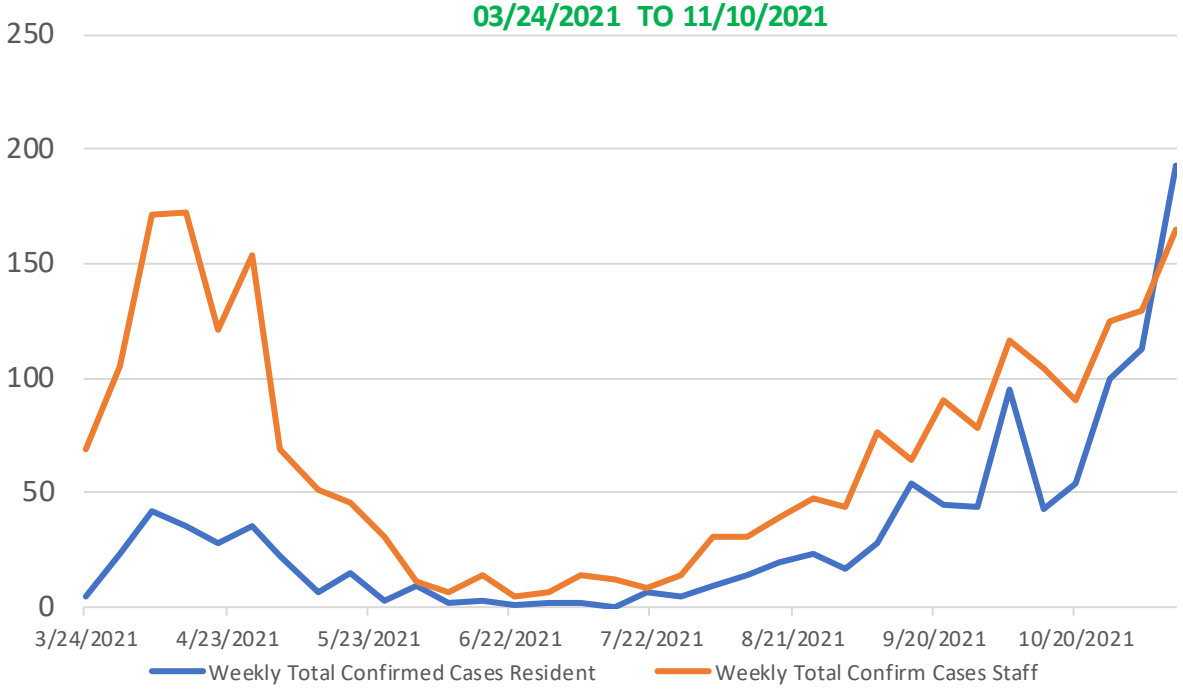
- The number of active outbreaks and clusters has continually increased since the start of the 2021-2022 academic year
- Since mid-September, Pre-School/Elementary have reported the most number of weekly active outbreaks/clusters

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

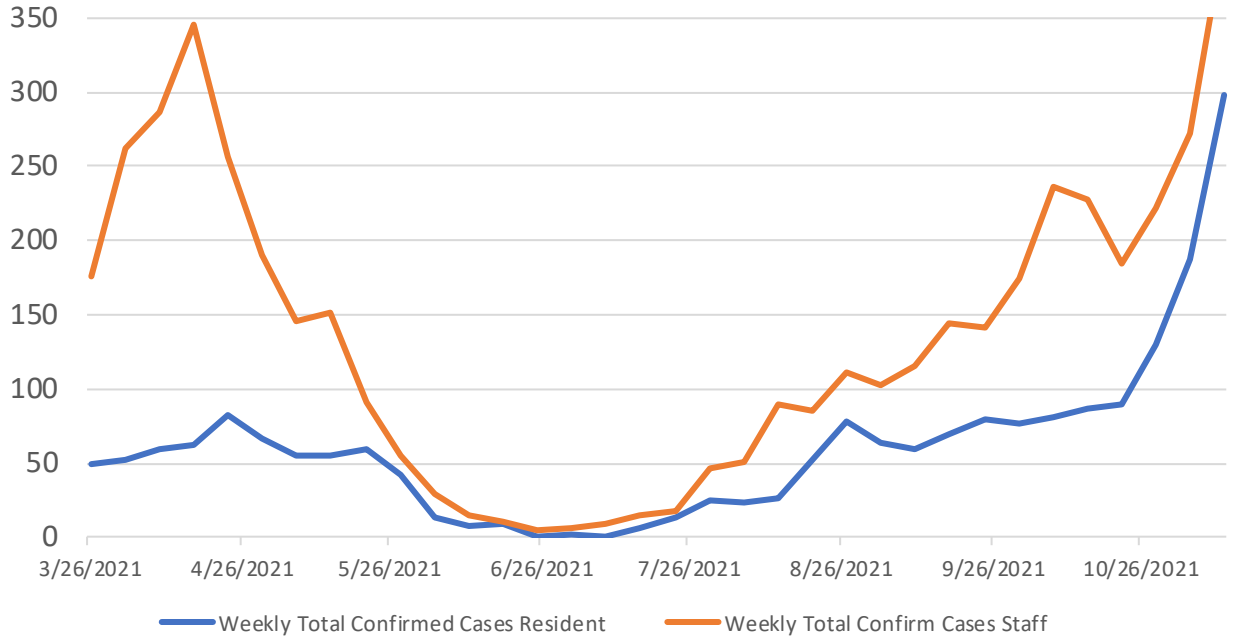
Source: LHD Weekly Sitreps

Reported Cases within Long Term Care Facilities: Adult Foster Care, Homes for the Aged, and Skilled Nursing Cases for Residents and Staff

STATE OF MICHIGAN WEEKLY TOTAL CONFIRMED COVID-19 CASES IN AFC/HFA RESIDENTS AND STAFF
03/24/2021 TO 11/10/2021



STATE OF MICHIGAN WEEKLY TOTAL CONFIRMED COVID-19 CASES IN SNF RESIDENTS AND STAFF
03/26/2021 TO 11/12/2021



Updates since last week:

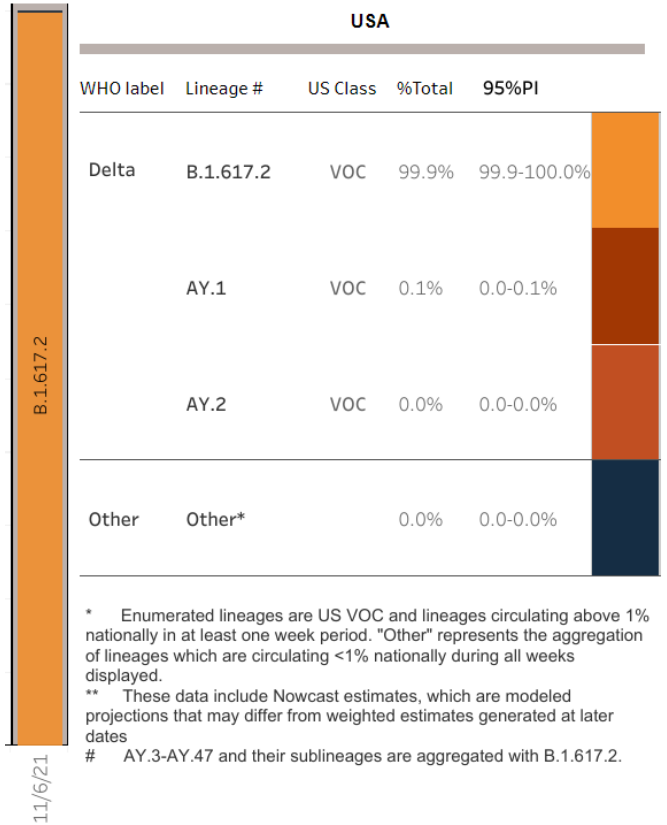
- Since June/July, there have been general increases in the number of weekly reported COVID cases within LTCF among both residents and staff
- Since the availability of vaccination, there have been more cases among staff than residents until recently

COVID-19 outbreaks are generally defined as two or more cases with a link by place and time indicating a shared exposure outside of a household (https://www.michigan.gov/coronavirus/0,9753,7-406-98163_98173_102057---,00.html)

The data is from weekly reporting by facilities with bed occupancy of at least 13 beds.

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

SARS-CoV-2 Variants Circulating in the United States. Oct 31 – Nov 6 (NOWCAST)

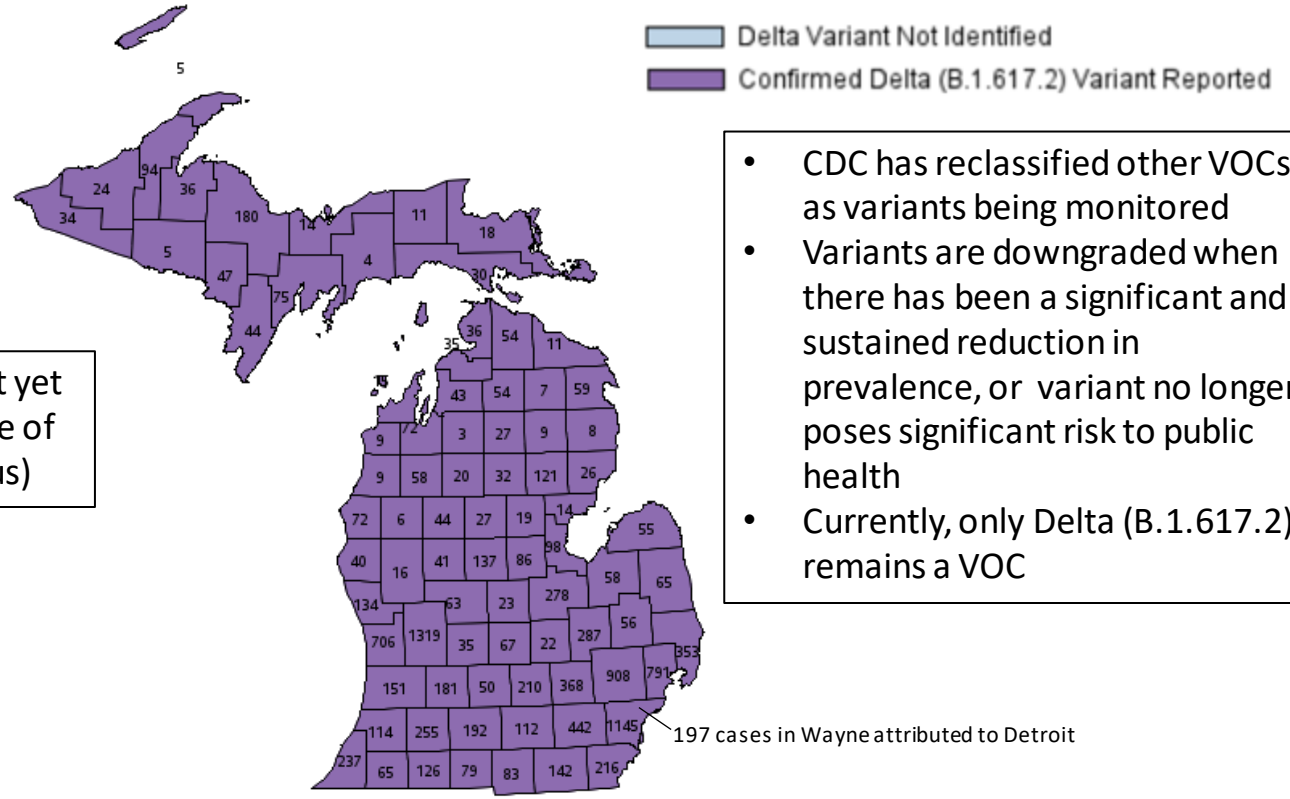


WHO label	Lineage #	US Class	%Total	95%PI
Delta	B.1.617.2	VOC	99.9%	99.9-100.0%
	AY.1	VOC	0.1%	0.0-0.1%
	AY.2	VOC	0.0%	0.0-0.0%
Other	Other*		0.0%	0.0-0.0%

* 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
# AY.3-AY.47 and their sublineages are aggregated with B.1.617.2.

Currently, CDC is not yet reporting prevalence of AY.4.2 (i.e., Delta plus)

Variants of Concern in Michigan, Nov 15



- 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 VOC Sequenced Prev.
B.1.617.2 (delta)	11,439	83	100%

Data last updated Nov 15, 2021
Source: MDSS

Update on breakthrough cases

Potential COVID-19 Vaccination Breakthrough Cases

Michigan part of CDC's nationwide investigation (COVID-19 Vaccine Effectiveness | CDC)

Michigan Data (1/1/21 through 11/05/21):

- **77,985 cases met criteria based on a positive test 14 or more days after being fully vaccinated**
- **Approximately 1.5% of people who were fully vaccinated met this case definition**
  - **Includes 944 deaths (823 in persons ages 65 years or older)**
  - **2,009 cases were hospitalized**

COVID-19 Vaccines Work

- Research provides evidence that COVID-19 vaccines are effective at preventing COVID-19.
- COVID-19 vaccination helps protect adults and children ages 5 years and older from getting sick or severely ill with COVID-19 and helps protect those around them.
- To receive the most protection, adults and children ages 5 years and older should receive all recommended doses of a COVID-19 vaccine.
- Some people who are fully vaccinated against COVID-19 will still get sick because no vaccine is 100% effective. Experts continue to monitor and evaluate how often this occurs, how severe their illness is, and how likely a vaccinated person is to spread COVID-19 to others.

Cumulative COVID-19 Cases by Vaccination Status, Michigan, Jan 15 – Nov 5

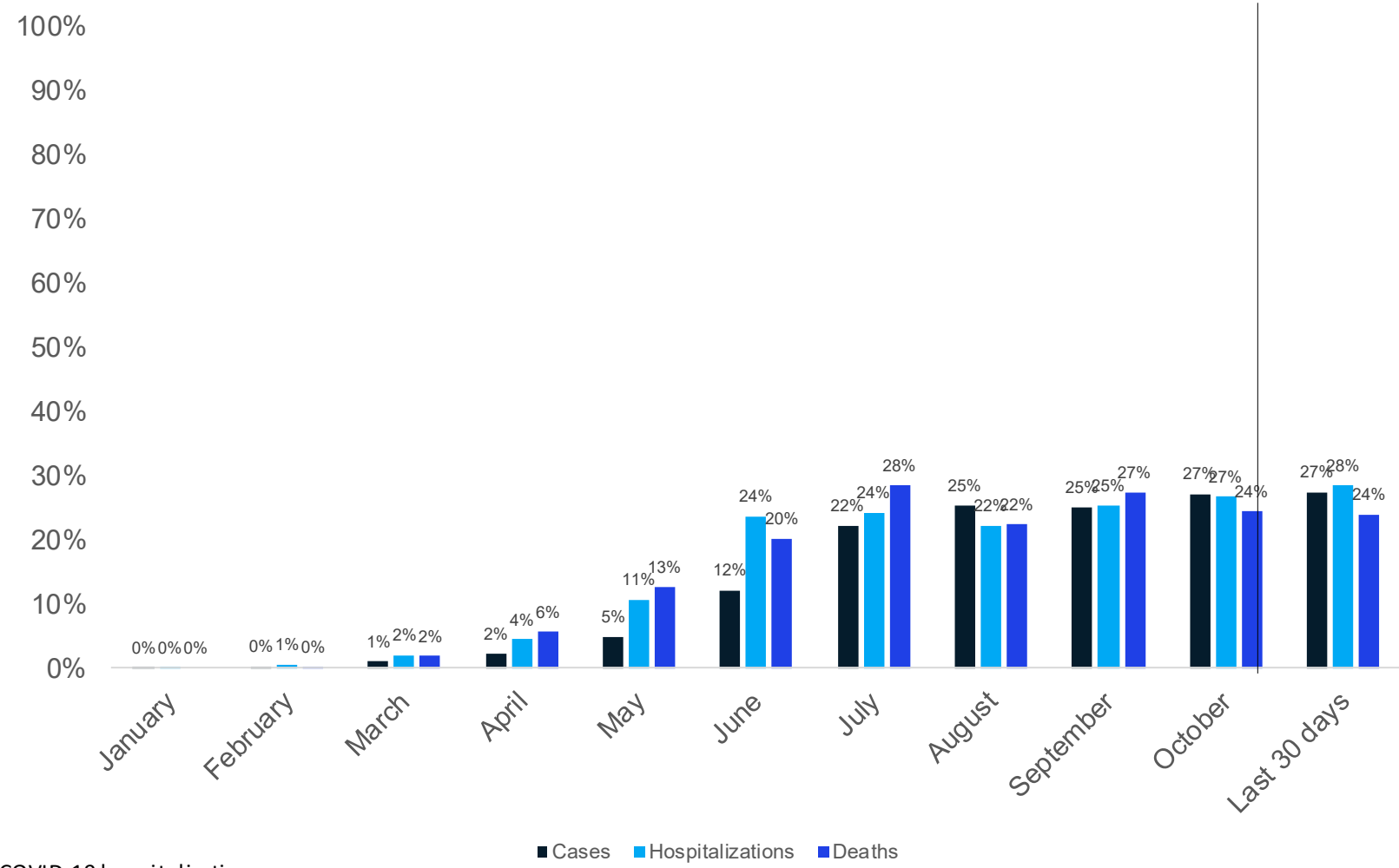
Fully Vaccinated People (5,063,855)		
Cases	**Hospitalization**	**Deaths**
Percent of Cases In People Not Fully Vaccinated (573,160 / 651,145) **88.0%**	Percent of Hospitalizations In People Not Fully Vaccinated (15,066 / 17,075) **88.2%**	Percent of Deaths In People Not Fully Vaccinated (6,760 / 7,704) **87.7%**
573,160 Total Cases Not Fully Vaccinated	**15,066** Total Hospitalized Not Fully Vaccinated	**6,760** Total Deaths Not Fully Vaccinated
Total Breakthrough Cases **77,985**	Total Breakthrough Hospitalizations **2,009**	Total Breakthrough Deaths **944**
1.54% Percent of Fully Vaccinated People who Developed COVID-19 (77,985 / 5,063,855)	**0.040%** Percent of Fully Vaccinated People Who Were Hospitalized for COVID-19 (2,009 /5,063,855)	**0.019%** Percent of Fully Vaccinated People Who Died of COVID-19 (944 /5,063,855)
12.0% Percent of Cases Who Were Fully Vaccinated (77,985 / 651,145)	**11.8%** Percent of Hospitalizations Who Were Fully Vaccinated (2,009/ 17,075)	**12.3%** Percent of Deaths Who Were Fully Vaccinated (944 / 7,704)
Total Cases: **651,145**	Total Hospitalizations: **17,075**	Total Deaths: **7,704**

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

- 54.1% of the population is fully vaccinated yet only account for ~24-28% of cases, hospitalizations, and deaths in the past 30 days
- As the fully vaccinated population has increased, so have the percent of breakthrough incidents; but breakthrough burden remains lower

In the last 30 days of complete data (Oct 7 – Nov 5), 28,842 (27%) of 105,043 cases, 404 (28%) of 1,423 hospitalizations, and 149 (24%) of 622 deaths were among fully vaccinated individuals



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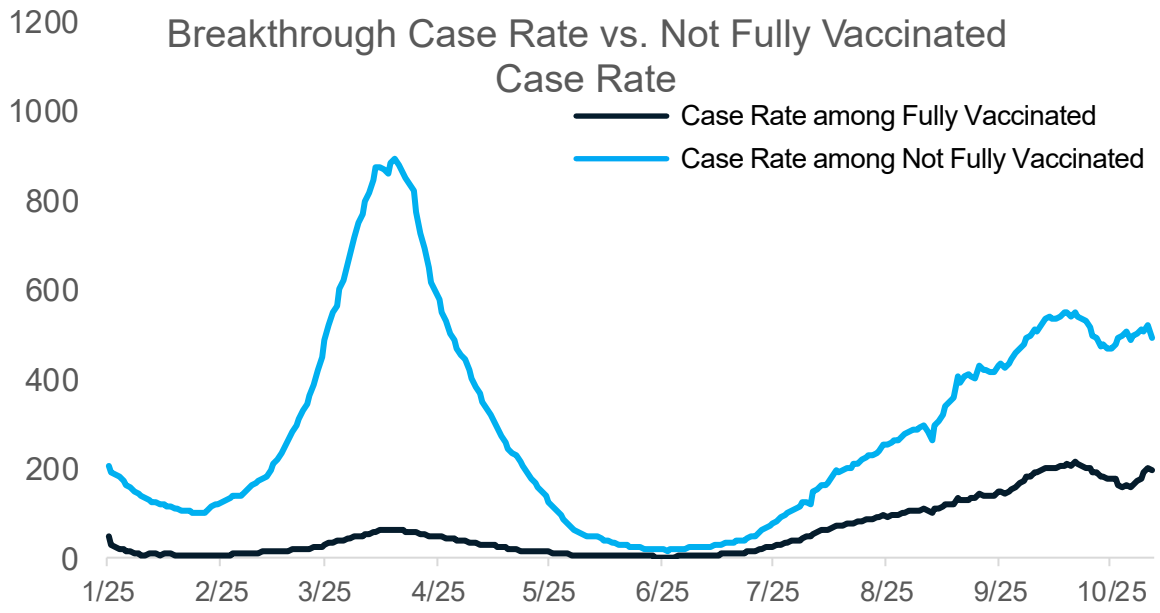
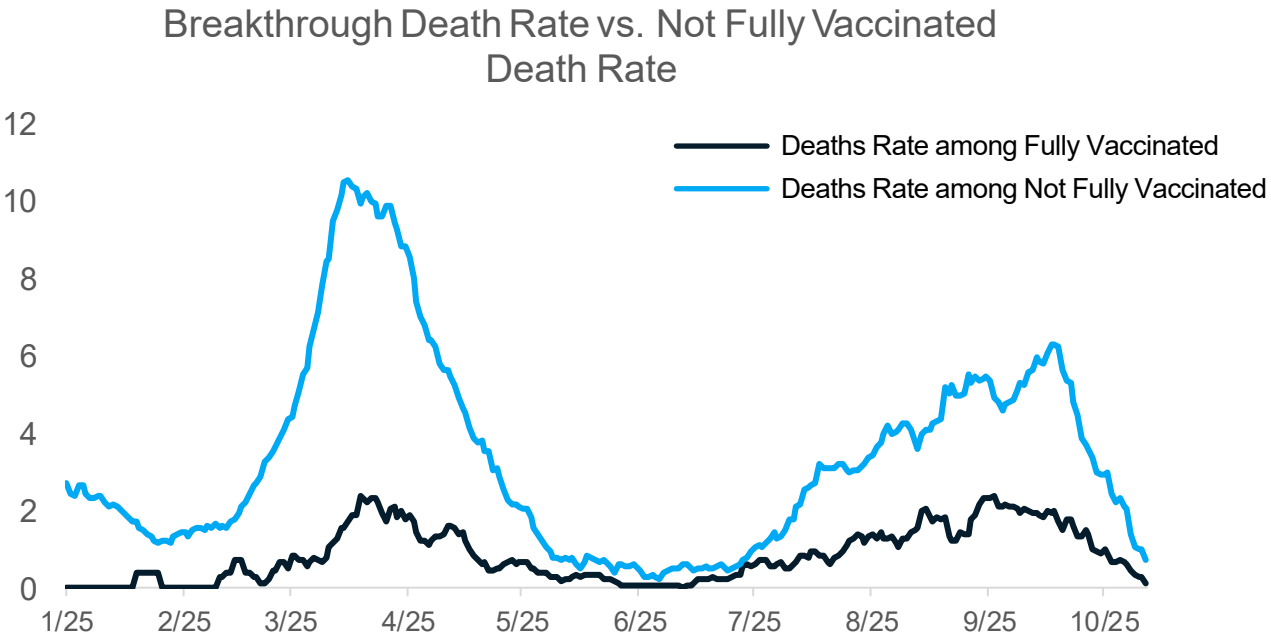
COVID-19 Vaccination Breakthrough Cases and Deaths





- Trends over time show that both case and death rates among the Fully Vaccinated are lower than the Not Fully vaccinated rates in Michigan
- The *proportion* of breakthrough cases and deaths among all cases and deaths has shown some increases as more people become fully vaccinated
  - **The risk of infection and death remains significantly lower among the fully vaccinated**

Key Messages: Healthcare Capacity and COVID Severity

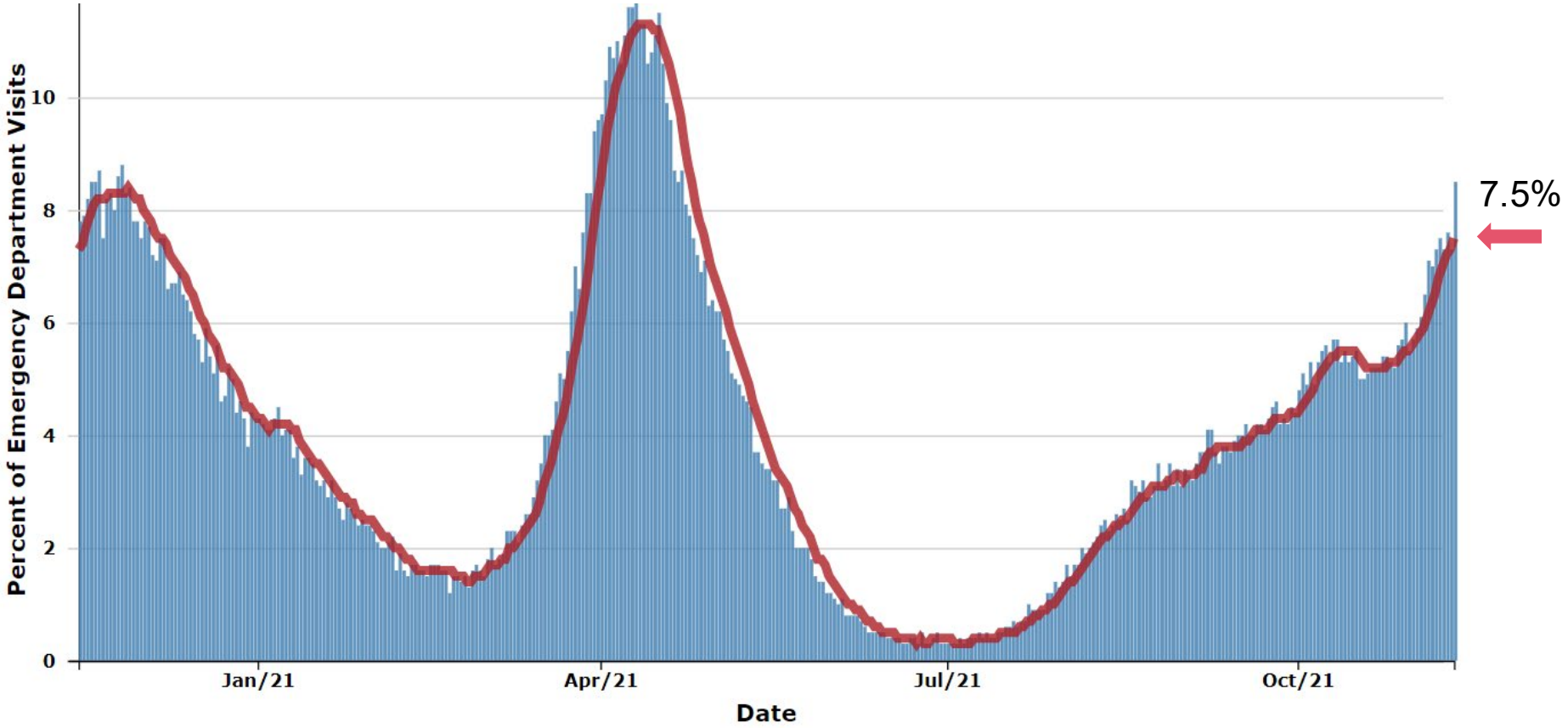
Emergency Department visits, Hospital Admissions, and Hospital Census area all increasing

- 7.5% of ED visits are for COVID diagnosis (up from 5.8% last week)
- Hospital admissions for most age groups have increased from last week
- Hospital census has increased 14% since last week (vs. 20% increase week prior)
- All regions have increasing trends in hospital census this week
  - Regions 2S and 2N experienced the highest growth in COVID-19 hospital census
  - All regions have greater than 200/M population hospitalized
  - Region 2S,3, and 6 now have greater than 300/M population hospitalized
- Overall, volume of COVID-19 patients in intensive care has increased 13% (vs. 4% increase last week)

Death rate has decreased to 4.0 daily deaths/million residents (down from 4.4 deaths/million last week)

- Deaths are a lagging indicator of other core metrics (on average, lag by 4-6 weeks)
- Trends for daily average deaths are increasing for all reported racial and ethnic groups
- Currently, American Indian/Alaskan Natives have the highest death rate (5.8 deaths/million)
- In the past 30 days, there have been between 1 and 5 COVID-related deaths among confirmed and probable COVID-19 cases under the age of 20

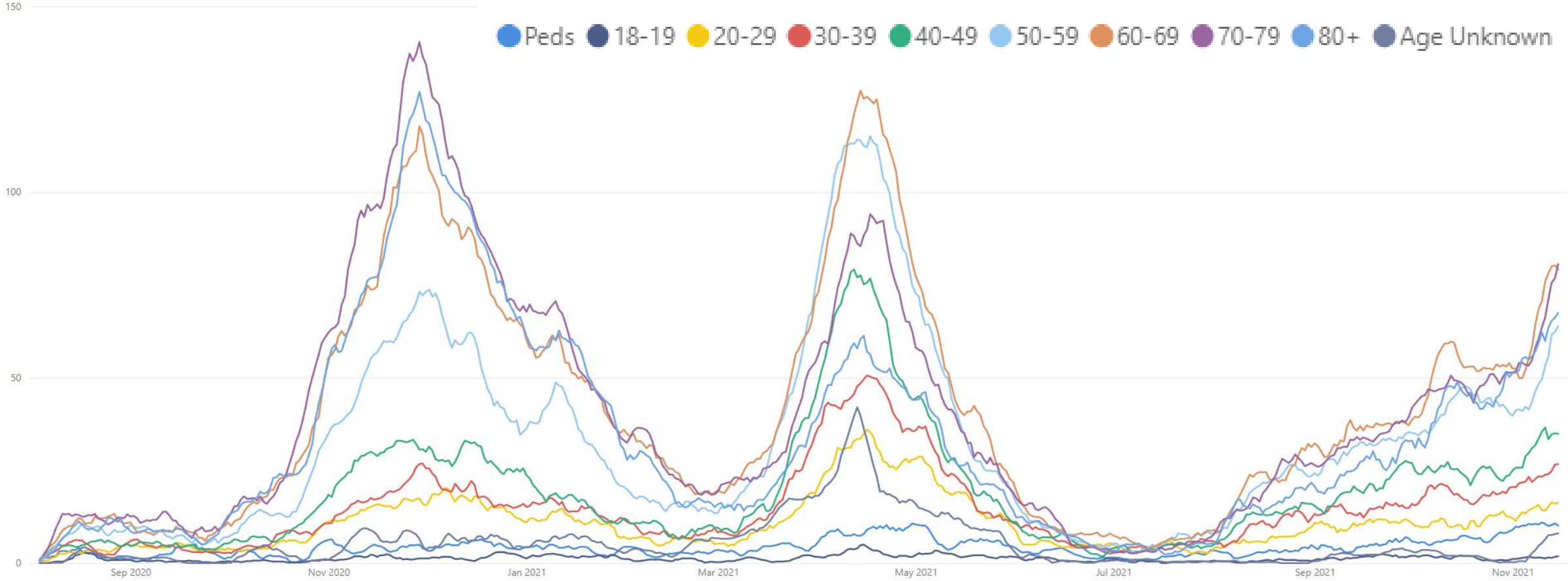
Michigan Trends in Emergency Department (ED) Visits for Diagnosed COVID-19



- Trends for ED visits have increased to 7.5% since last week (up from 5.8%)
- Trends for nearly all age groups are increasing
- Over past week, those 50-64 years saw highest number of avg. daily ED CLI visits (10.1%), but those between 40+ all above state average

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

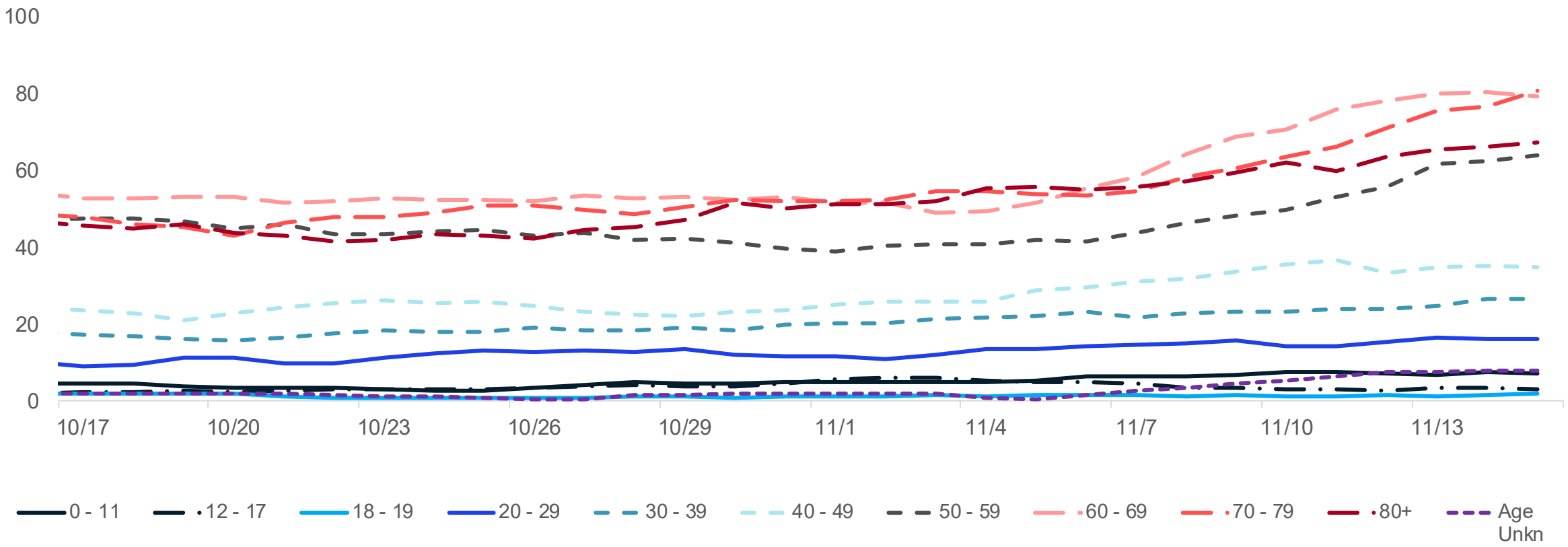
Average Hospital Admissions Are Increasing for all Age Groups



- Trends for daily average hospital admissions have increased 25% since last week (vs. 17% increase prior week)
- Nearly all age groups saw increases this week with largest increases in those between 70 and 79 years (39%, +22)
- More than 60 daily hospital admissions was seen for each of the age groups of 50-59, 60-69, 70-79, and 80+

Source: CHECC & EM Resource

Average Hospital Admissions by Age Groups



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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	7.3	5.2	+13% (+1)
12-17	3.3	4.4	-4% (-<1)
18-19	1.9	7.0	+30% (+<1)
20-29	16.3	11.8	+8% (+1)
30-39	26.7	22.0	+18% (+4)
40-49	34.9	29.6	+9% (+3)
50-59	**63.9**	**47.3**	**+38% (+17)**
60-69	**79.1**	**62.0**	**+23% (+15)**
70-79	**80.6**	**105.1**	**+39% (+22)**
80+	**67.4**	**162.8**	**+18% (+10)**
Total¶	**389.3**	**39.0**	**+25% (+79)**

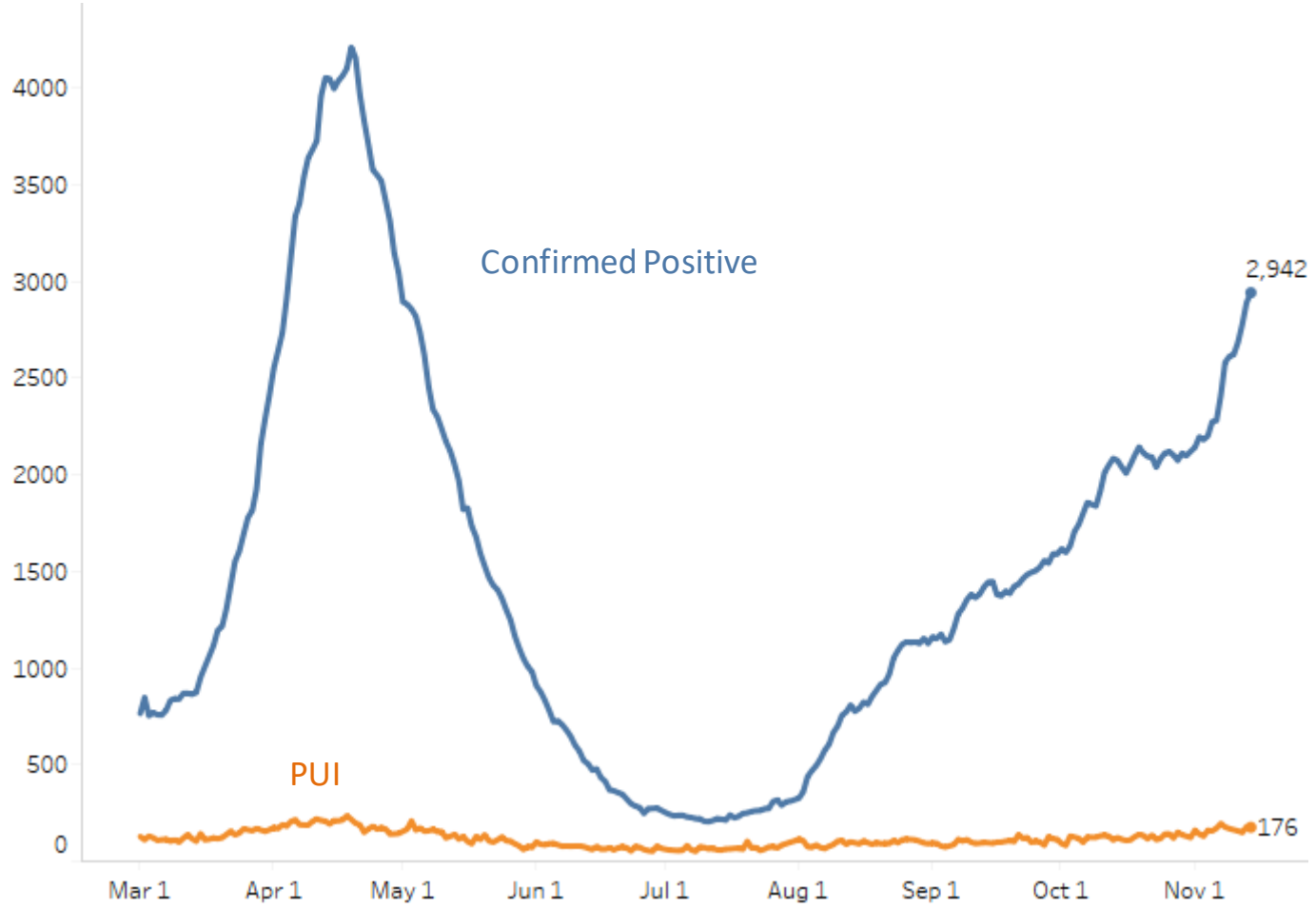
* Rate per 1 million residents; † Rolling 7-day average; ¶ Total may not reflect state due to missing age data
Note: Hospital Admission data reflects date data was submitted
Source: CHECC and EM Resource

- Through November 15, there were an average of 389 hospital admissions per day due to COVID-19, which is an increase from last week (↑25%, +79)
- Most age groups saw increases this week, with largest increases in age groups older than 50
- The largest one-week increase in number of admissions were among those 70-79 (+22, +39%)
- More than 60 daily hospital admissions was seen for those aged 50-59, 60-69, 70-79, and 80+
- Average daily hospital admission rate (162.8 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

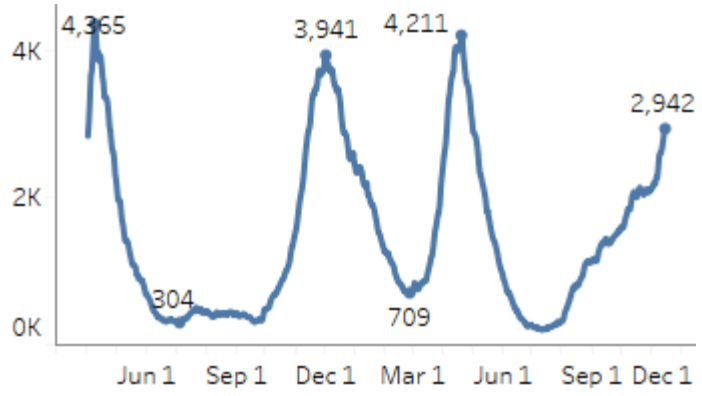
Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 3/1/2021 – 11/14/2021
Confirmed Positive & Persons Under Investigation (PUI)

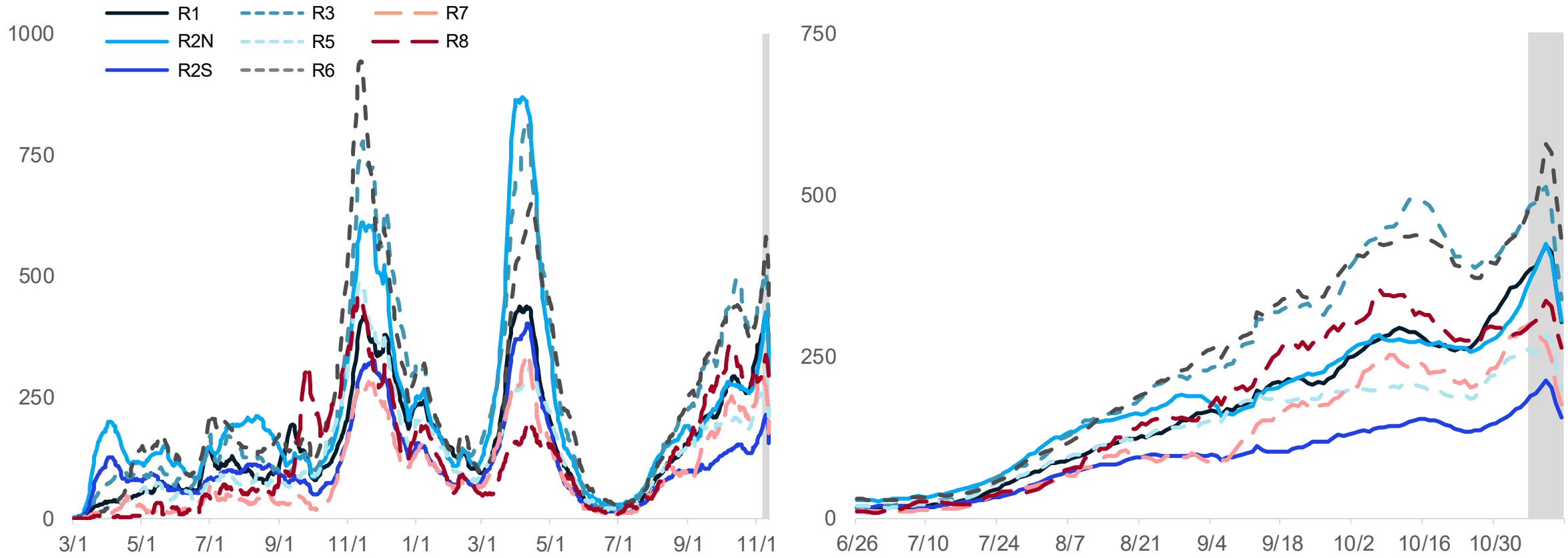


The COVID+ census in hospitals has increased by 14% in the past week (previous week was 20% growth). Census is now at ~70% of prior peaks.

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



Michigan Regional Case Rate Trends – Preparedness Regions

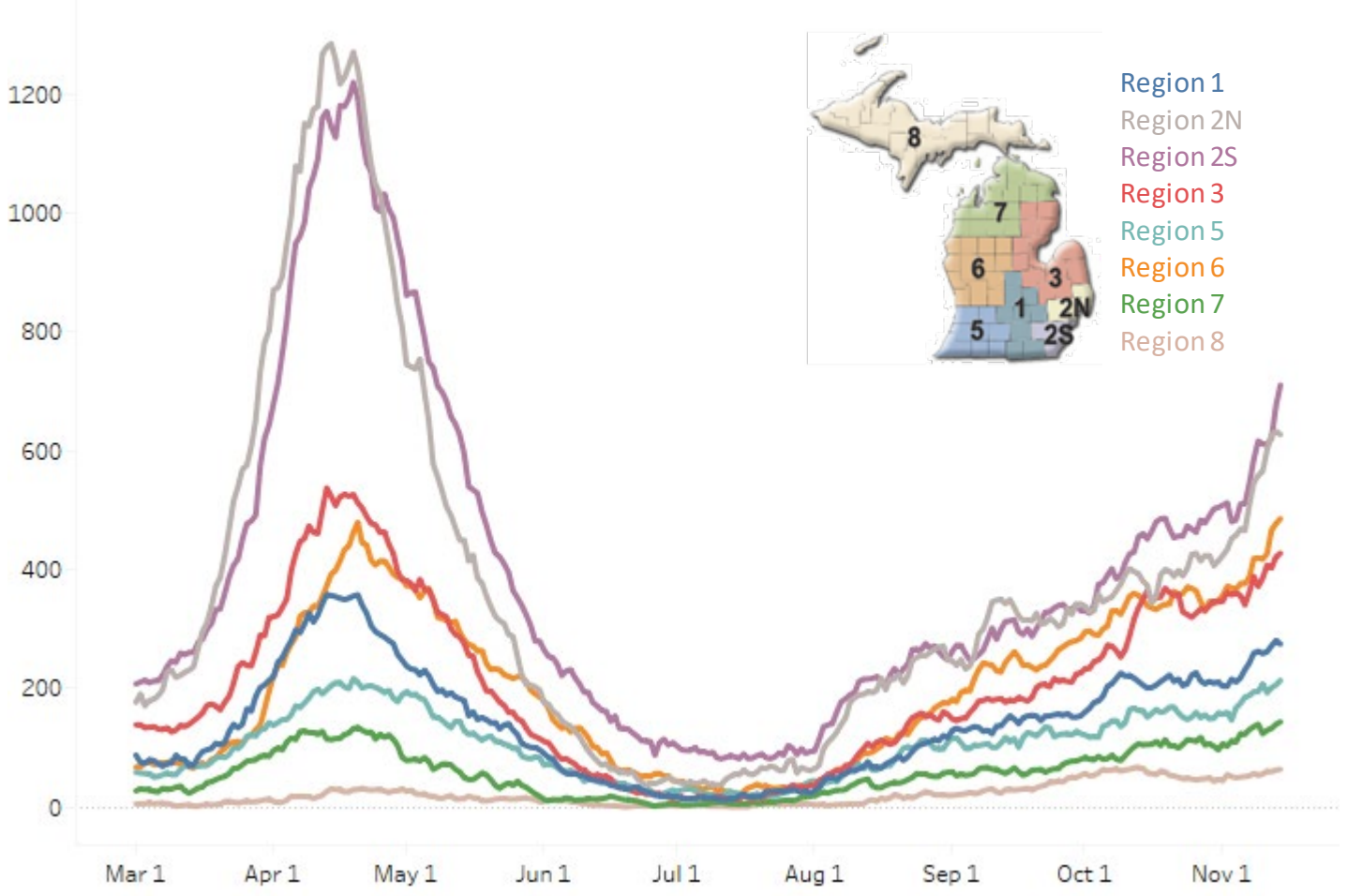


- Case rates in all preparedness regions are increasing
- Case rate is highest in Region 3 and Region 6; these regions are seeing highest hospitalizations per million residents (shown on next slide)

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

Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 3/1/2021 – 11/14/2021
Confirmed Positive by Region



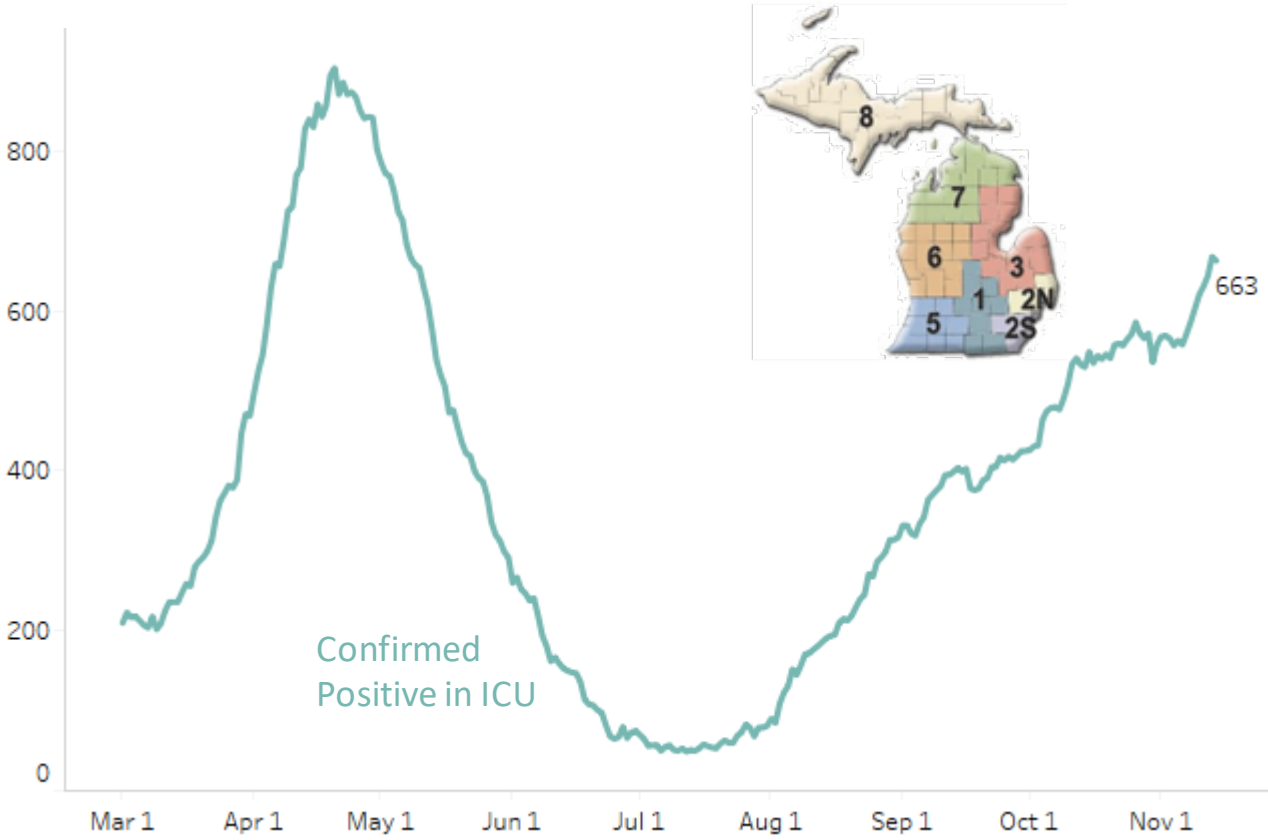
The census of COVID+ patients have increased across all regions. Region 2S had the fastest growth this week.

Regions 2S, 3, and 6 now have greater than 300 people hospitalized per Million population.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	274 (6%)	253/M
Region 2N	627 (15%)	283/M
Region 2S	710 (21%)	319/M
Region 3	427 (10%)	377/M
Region 5	213 (10%)	223/M
Region 6	485 (16%)	331/M
Region 7	143 (6%)	286/M
Region 8	63 (13%)	202/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 3/1/2021 – 11/14/2021
Confirmed Positive in ICUs



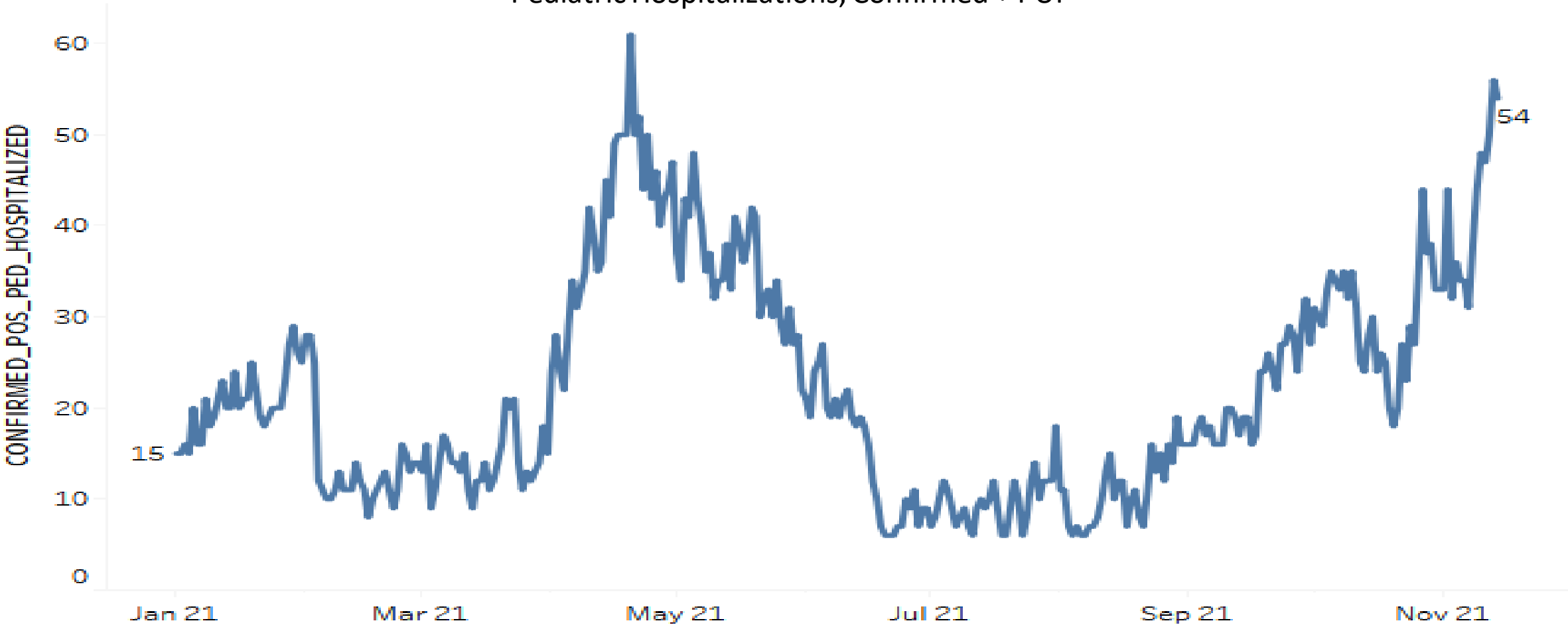
Overall, the census of COVID+ patients in ICUs has increased 13% from last week. 7/8 Regions experienced growth.

Regions 1, 3, and 7 have overall adult ICU occupancy greater than or equal to 85%. Regions 1, 3, 6, 7 and 8 have more than 30% of ICU beds filled with COVID+ patients. Region 6 has >40% 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	69 (41%)	93%	36%
Region 2N	119 (6%)	83%	21%
Region 2S	146 (11%)	84%	21%
Region 3	107 (26%)	91%	31%
Region 5	46 (2%)	77%	25%
Region 6	110 (10%)	83%	41%
Region 7	47 (-2%)	88%	33%
Region 8	19 (12%)	70%	30%

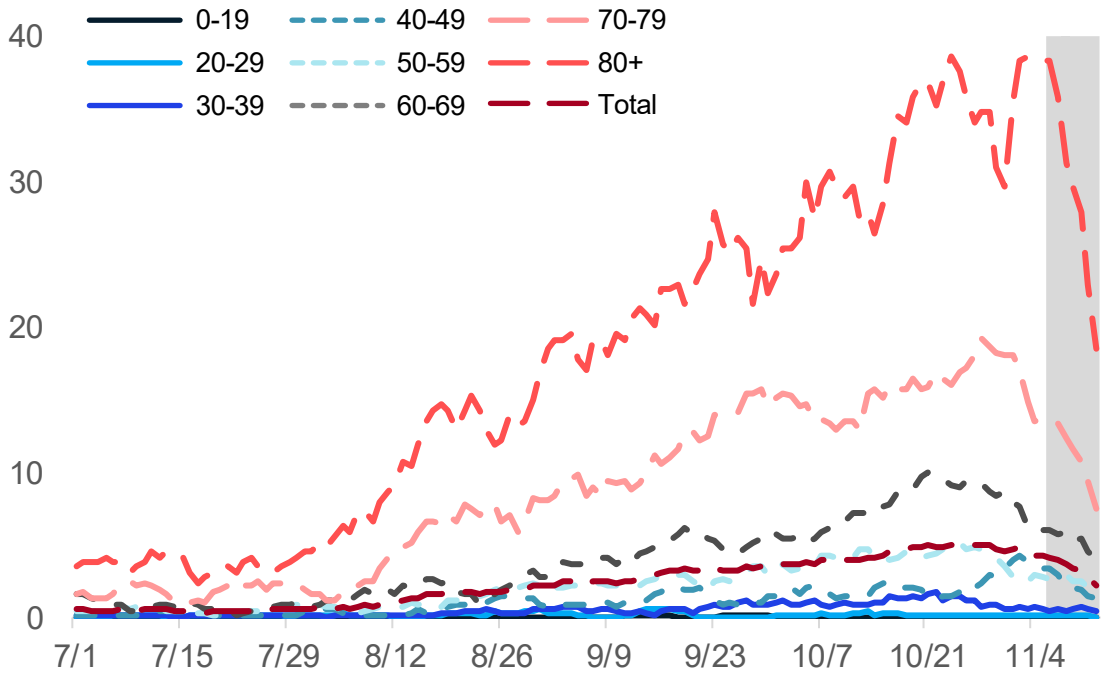
Statewide Hospitalization Trends: Pediatric COVID+ Census

Hospitalization Trends 1/1/2021 – 11/14/2021
Pediatric Hospitalizations, Confirmed + PUI



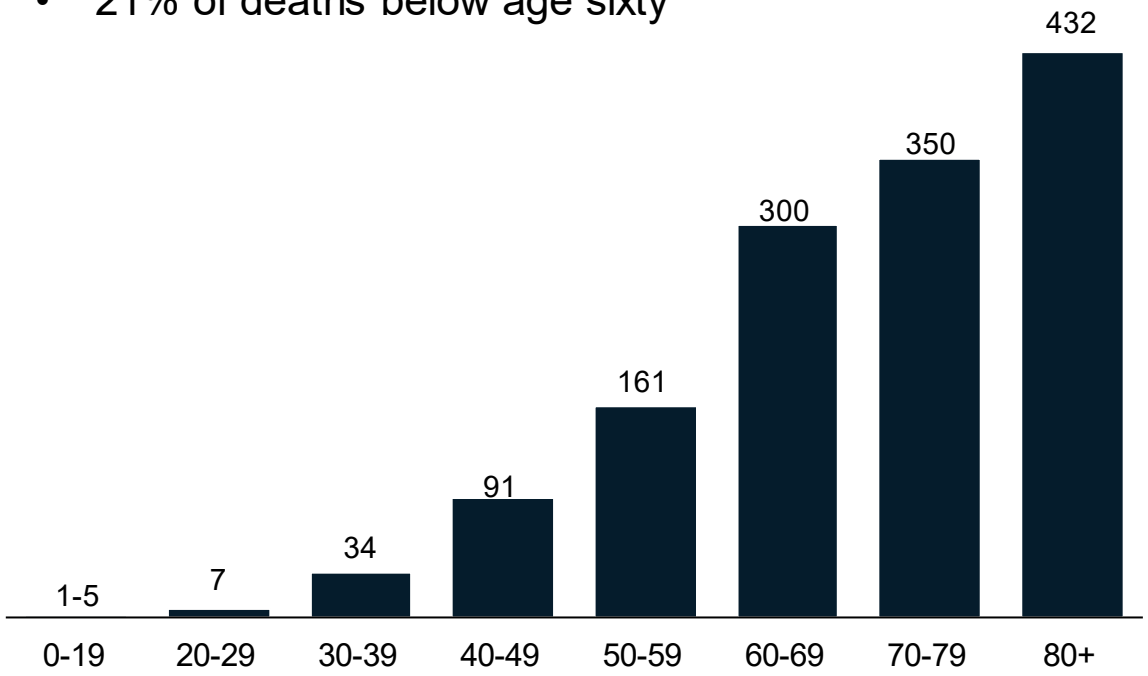
Average and total new deaths, by age group

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 11/15/2021)

- 21% of deaths below age sixty

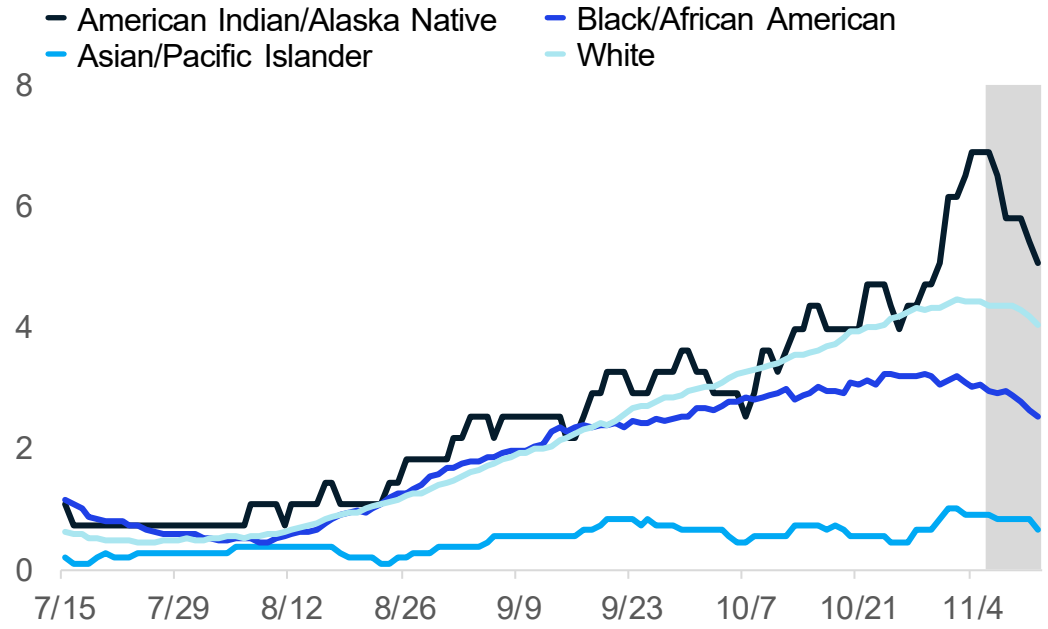


- Through 11/8, the 7-day avg. death rate is more than 30 daily deaths per million people for those over the age of 80
- In the past 30 days, there were between 1 and 5 COVID-related deaths among confirmed and probable COVID-19 cases under the age of 20

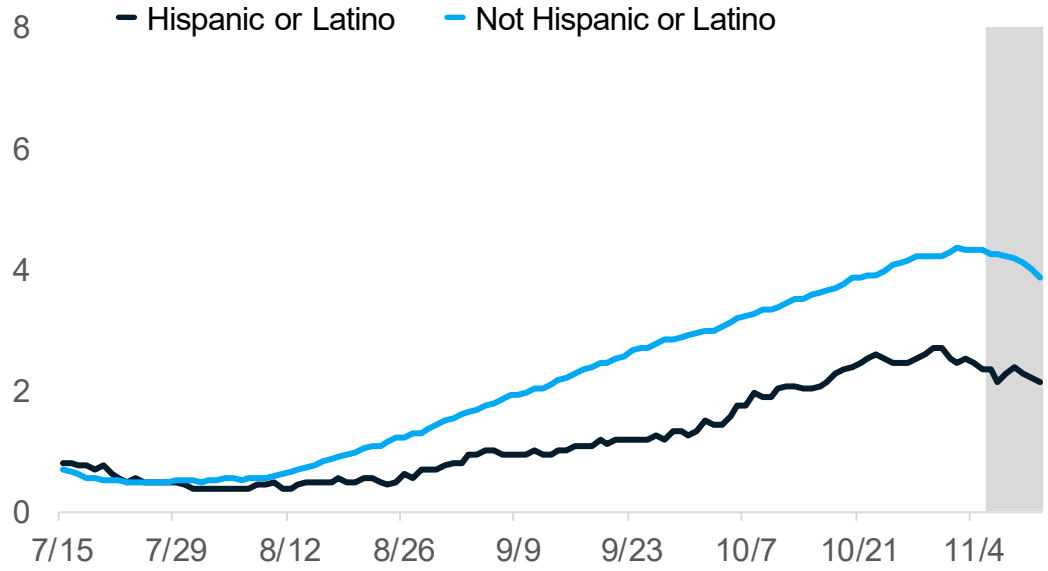
Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System (MDSS)

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 plateaued for most reported races and ethnicities
- Currently, American Indian/Alaskan Natives have the highest death rate (5.8 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

- 9,892 first doses administered each day (7-day rolling average); total administrations increasing
- More than 1,006,103 third doses administered as of 11/11, may include additional dose or booster dose
- Nearly 5.4 million people (54.1% of the population) in the state are fully vaccinated

COVID-19 Boosters

- Over 1.1 million people have received an additional/booster dose in Michigan

Pediatric Vaccination

- Interactive dashboard now includes pediatrics vaccination doses (live updates effective 11/5)
- 67,421 administrations in 5- to 11-year-olds as of 11/16

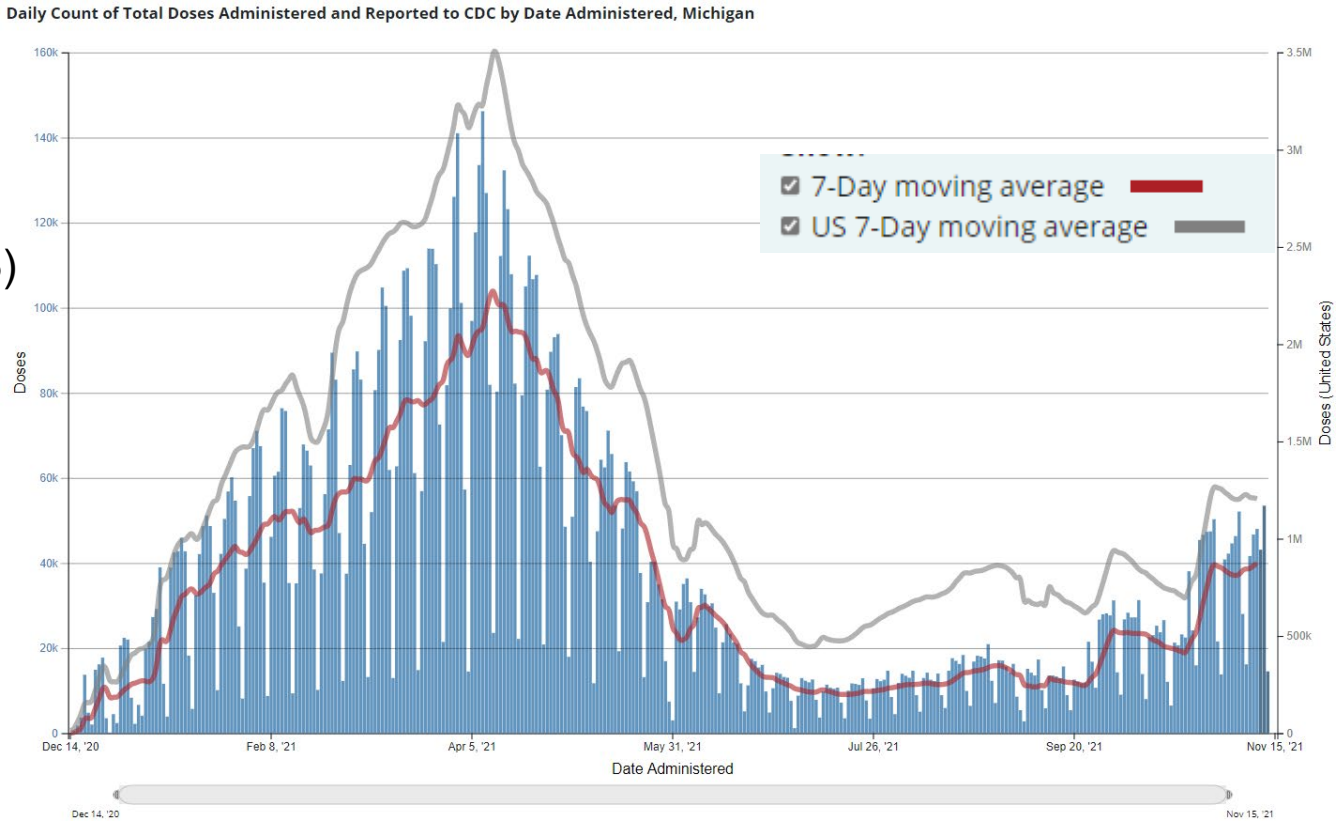
Average daily doses administered increase (data through 11/15/2021)

15,867,020 doses delivered to providers and
12,106,761 doses administered*

MI 7-day rolling average ending November 10th
- 39,846 total doses/day on average† (35,833 on 11/03)
- 9,892 first doses/day on average † (4,787 on 11/03)

Total primary series doses in month of October were most frequently administered¶ by:
Pharmacies (173,134)
LHD (12,957) and hospitals (11,198)
Family practice (8,890) and FQHCs (6,742)

Third Doses
- 1,130,404 third doses administered as of 11/16



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

Nearly 5.4 Million Michiganders fully vaccinated and 54.1% of total population fully vaccinated

~5.4 million people in the state are fully vaccinated*

85.2% of people aged 65 and older have completed the series (↑0.2%)*

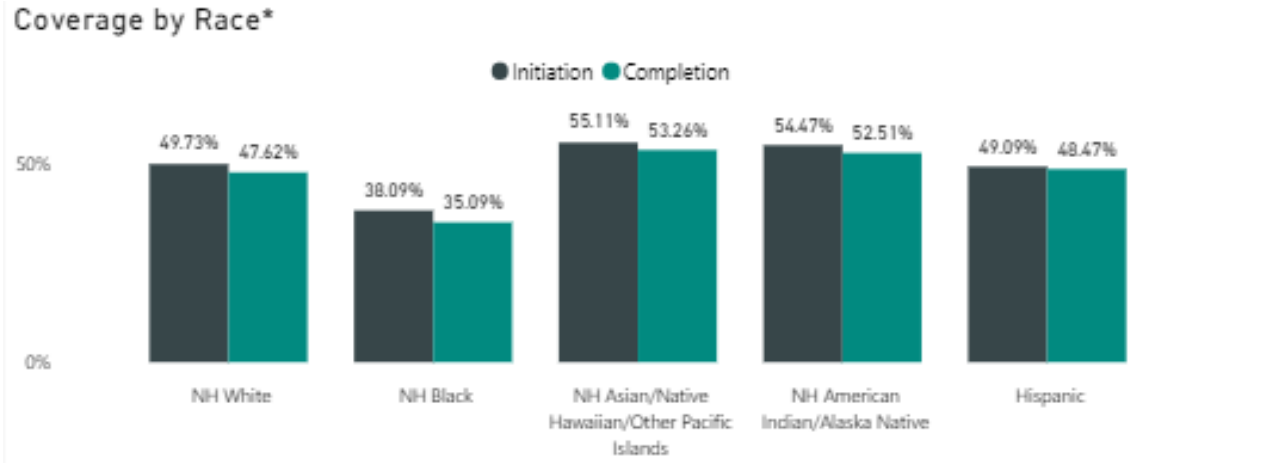
59.6% of total population initiated (↑0.9%)*

Race/Ethnicity¶ for those 12 years and older:

- Initiation coverage highest among those of Non-Hispanic (NH) Asian, Native Hawaiian or Pacific Islander Race (55.11%), then NH American Indian (54.47%), NH White (49.73%), NH Black or African American Races (38.09%).
- Initiation is at 49.09% for those of Hispanic ethnicity
- Completion follows the same pattern
- 13.51% data missing or unknown

Vaccination Coverage in Michigan as of 11/15/21

Age Group	% At Least One Dose	% Fully Vaccinated	Number Fully Vaccinated
Total Population	59.6%	**54.1%**	5,399,540
≥ 12 years	68.6%	62.8%	5,399,365
≥ 18 years	70.8%	64.9%	5,090,143
≥ 65 years	92%	85.2%	1,504,869



*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

Booster Administration Update

https://covid.cdc.gov/covid-data-tracker/#vaccinations

More than 2 in 5 fully vaccinated persons in Michigan aged 65+ have received a booster dose

CDC | Data as of: November 16, 2021 6:00am ET. Posted: Tuesday, November 16, 2021 1:52 PM ET

Download Data

State/Territory/Federal Entity	People with a Booster Dose by State of Residence	Percent of Fully Vaccinated People with a Booster Dose by State of Residence	People 65+ with a Booster Dose by State of Residence	Percent of Fully Vaccinated Population 65+ with a Booster Dose
California	3,738,973	15.2	1,892,200	38.4
Texas	2,241,288	14.3	1,101,393	35.8
Florida	2,017,513	15.5	1,357,921	34.6
Illinois	1,385,402	17.8	745,263	41.9
New York State	1,298,348	9.9	729,953	25.7
Ohio	1,192,881	19.4	722,517	41.5
Michigan	1,130,404	20.9	647,407	43
Virginia	976,753	17.8	518,564	43.2
New Jersey	913,471	15.3	480,143	36.7
Washington	893,544	12.2	497,292	45.5
Pennsylvania	854,238	10.8	495,894	22.5
Massachusetts	807,204	16.6	428,497	40.2
Minnesota	796,753	22.8	446,623	51.7
Colorado	752,417	20.9	371,123	50.4
Wisconsin	745,785	21.7	428,654	45.6
Maryland	739,762	18.3	388,823	44.4
Georgia	689,615	13.3	395,191	32.5
Tennessee	618,879	18.5	365,109	39.4
North Carolina	597,180	10.6	325,262	22.5

Now over 1.1 million Michiganders with a booster dose

Michigan is the 10th biggest state in population, but ranks 7th in terms of total COVID booster administrations
Michigan also ranks high in terms of booster administration rate, especially compared to other populous states

COVID Vaccine Coverage

Dashboard Updated: November 16, 2021. "Completion" is the percentage of Michigan residents receiving 2 doses of Pfizer or Moderna or 1 dose of J&J. "Initiation" is the percentage who have received either 1 or more doses of ANY vaccine. See the "Learn More" page to learn how percentages

Data as of : 11/15/21

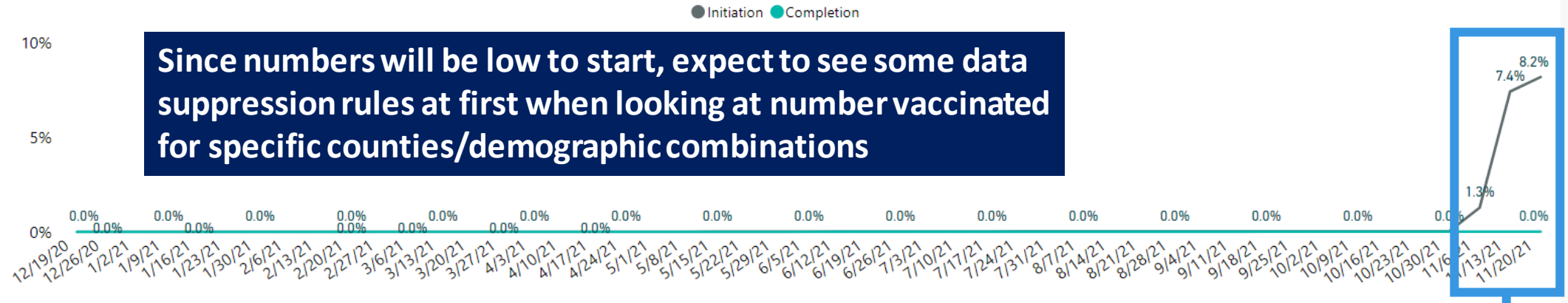
Preparedness Region: All

County: All

Local Health Dept. Jurisdiction: All

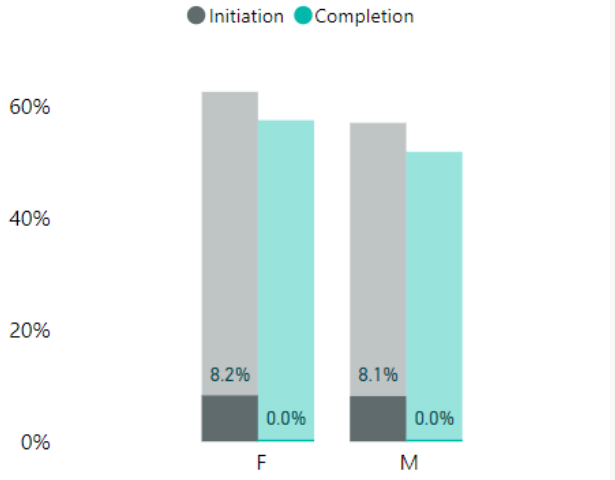
Week Ending Date: 12/19/2020 – 11/20/2021

Cumulative Coverage by Week Ending Date

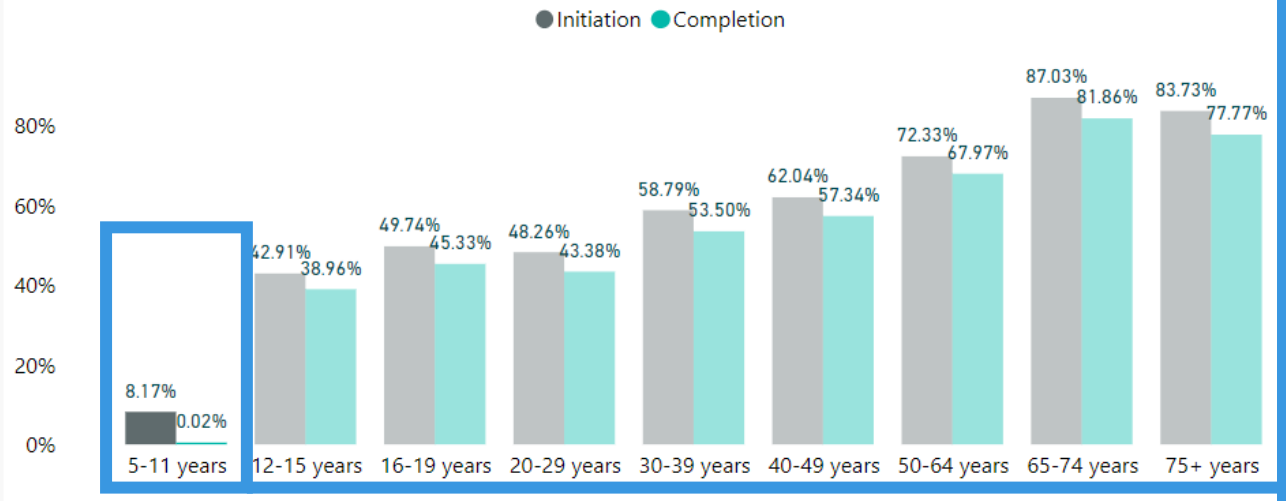


Since numbers will be low to start, expect to see some data suppression rules at first when looking at number vaccinated for specific counties/demographic combinations

COVID Vaccine Coverage by Sex



COVID Vaccine Coverage by Age Group



5- to 11-year-old initiation and completion trends now available

Data are refreshed Tuesdays and Friday afternoons

14,169 administrations in 5- to 11-year-olds as of 11/16

Key Messages: Science Round Up

Excess Deaths During the COVID-19 Delta Variant Surge

- There were fewer mitigations implemented to prevent transmission in the Southern U.S. in response to the Delta surge compared to parts of the Midwest
- There were also nearly twice as many excess deaths per capita in Southern U.S. compared the parts of the Midwest

Hospital

- Hospital census has returned to spring peak levels and is rising

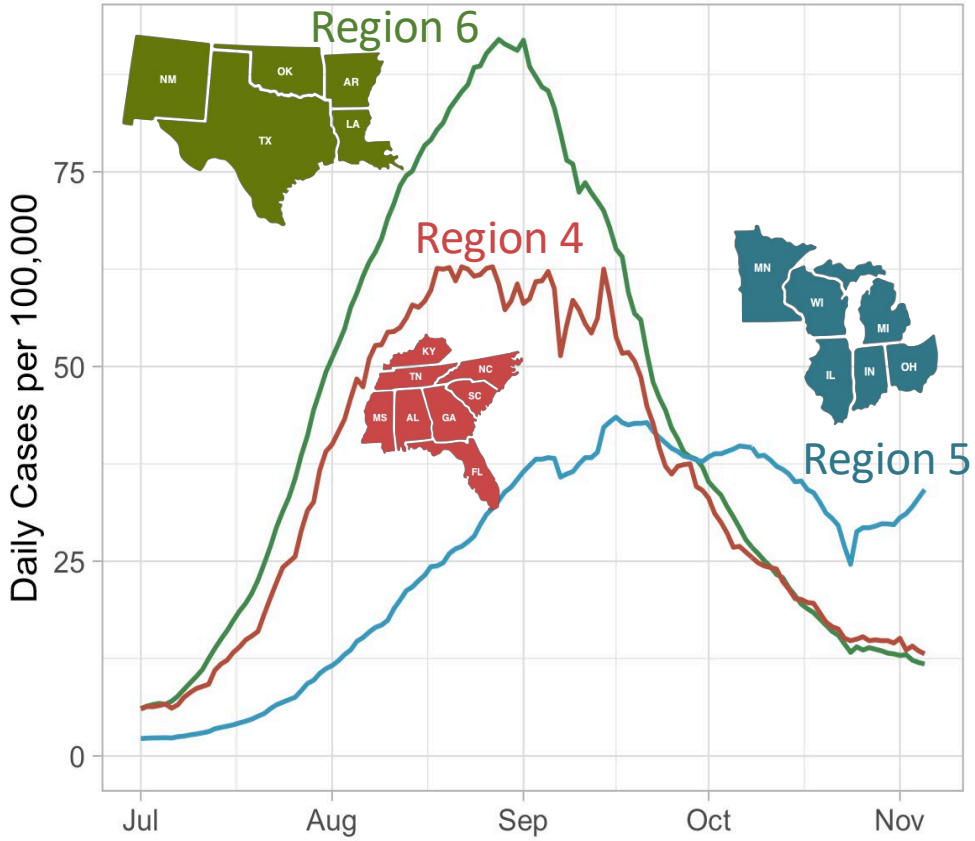
Holiday Guidance

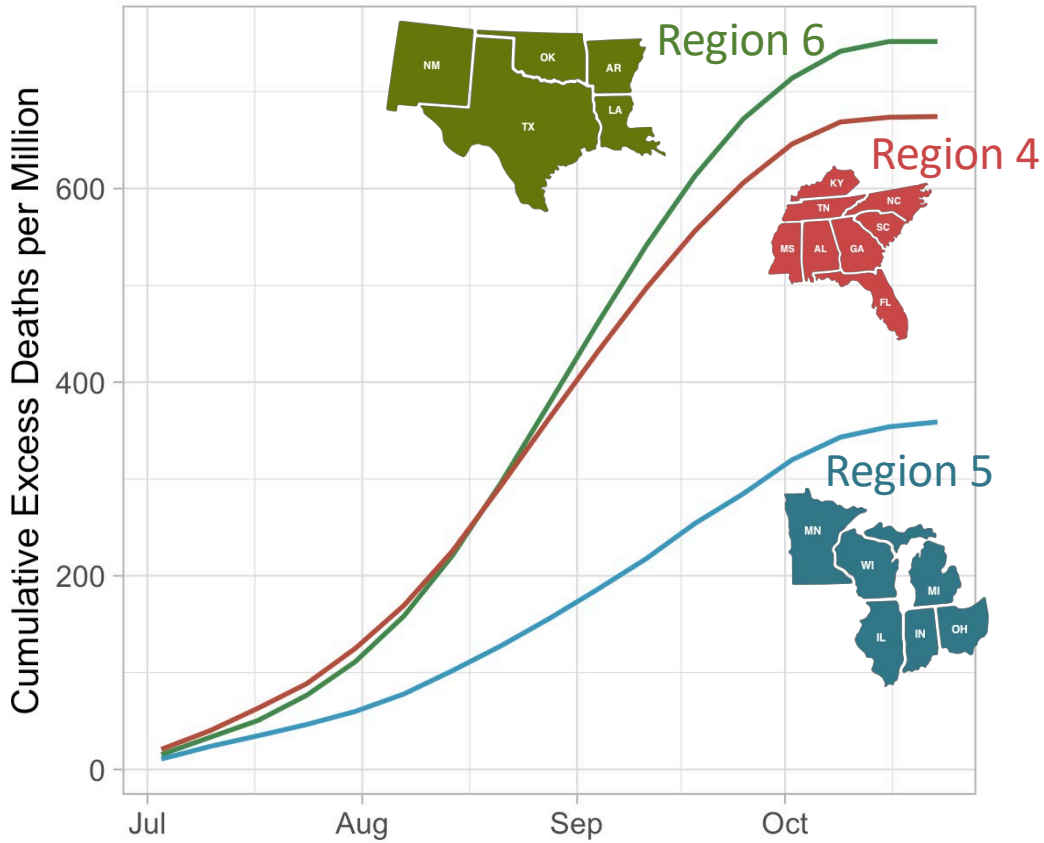
- The best way to minimize COVID-19 risk and keep your family and friends safer is to **get vaccinated** if you're eligible.
- If you are sick or have symptoms, don't host or attend a gathering.
- Regardless of vaccination status, all those aged 2 or older, you should **wear a mask in indoor public places** in areas of substantial or high SARS-CoV-2 transmission and in crowded, poorly ventilated outdoor areas.
- **Before a multihousehold gathering, consider taking a rapid antigen test**, regardless of whether you've been in contact with someone with COVID-19; if you test positive, stay home until you consult your provider and rule out any possibility of infecting others.

Consider Impact of Household Transmission on Work Force

Regional Differences and Excess Deaths

South vs. the Midwest—areas with earlier Delta surges have seen higher excess deaths since July



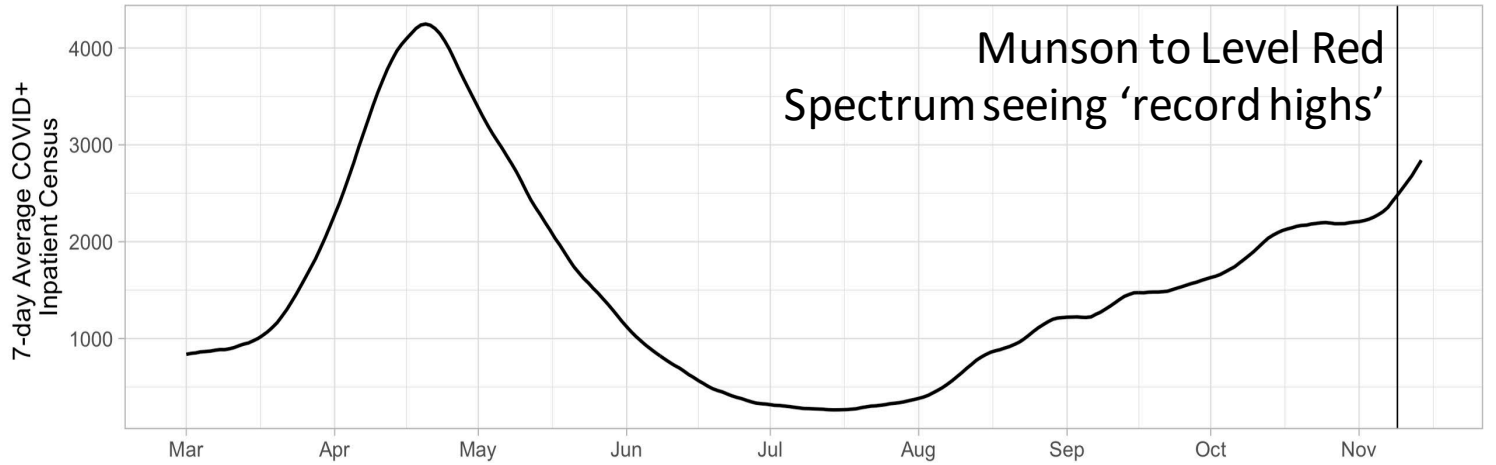


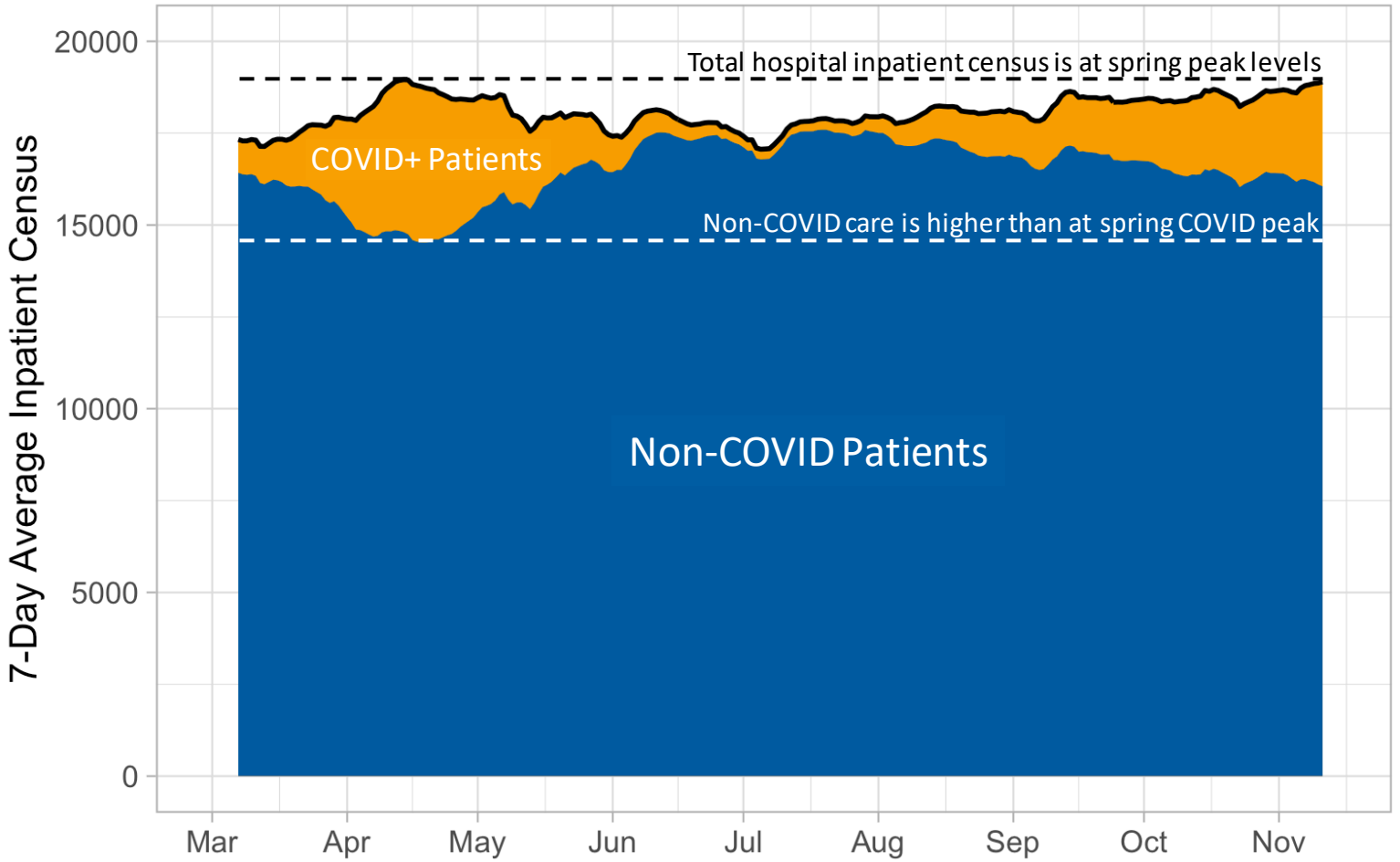
- There were fewer mitigations (e.g., masking within schools) implemented to prevent transmission in the Southern U.S. (HHS Regions 4 and 6) in response to the Delta surge compared to parts of the Midwest (HHS Region 5)
- Since July 1, 2021, there was nearly twice as many excess deaths in HHS Regions 4 and 6 compared the Region 5

Sources: CDC data tracker and excess deaths data as of 11/7/21

Hospital census has returned to spring peak levels and is rising

- Cases and COVID+ census are rising, though they are currently lower than spring peak
- However, non-COVID care is higher than during spring surge (white dashed line)
- Together, overall inpatient census is at spring peak levels (black dashed line)
- Likely to increase further if COVID and flu continue to grow



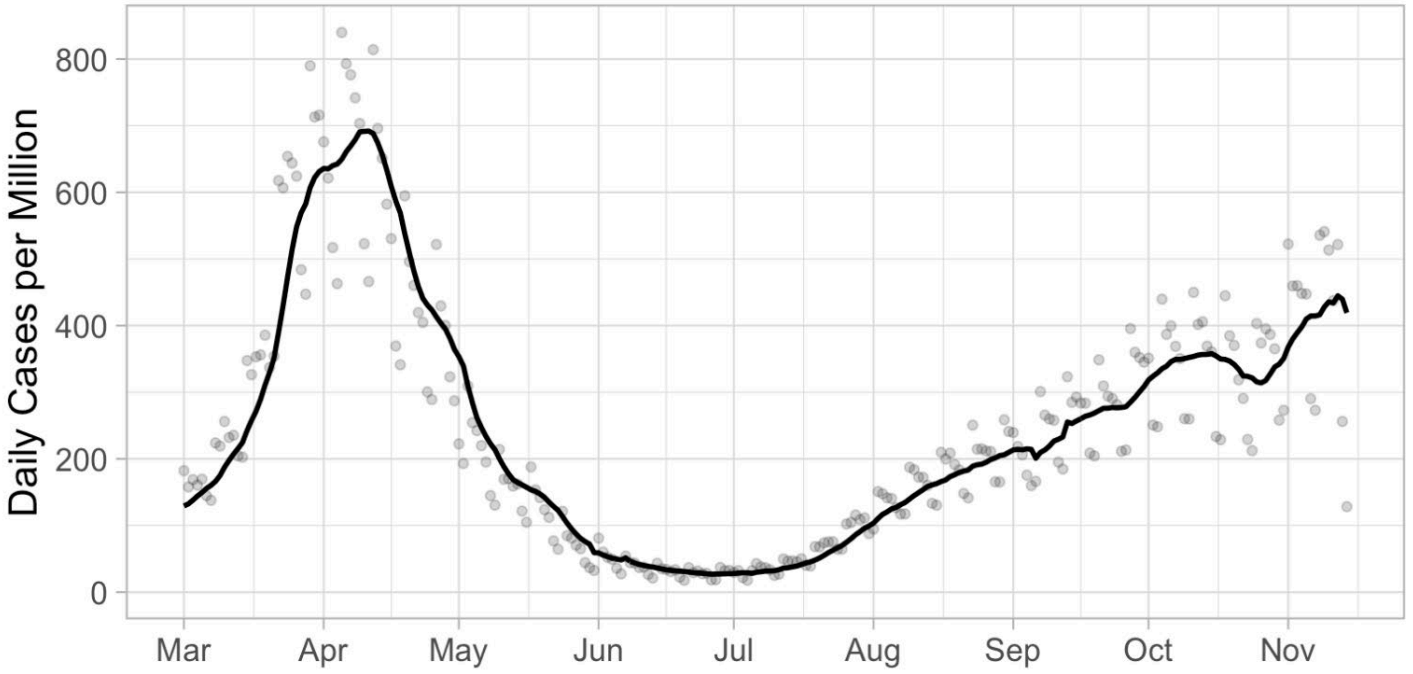


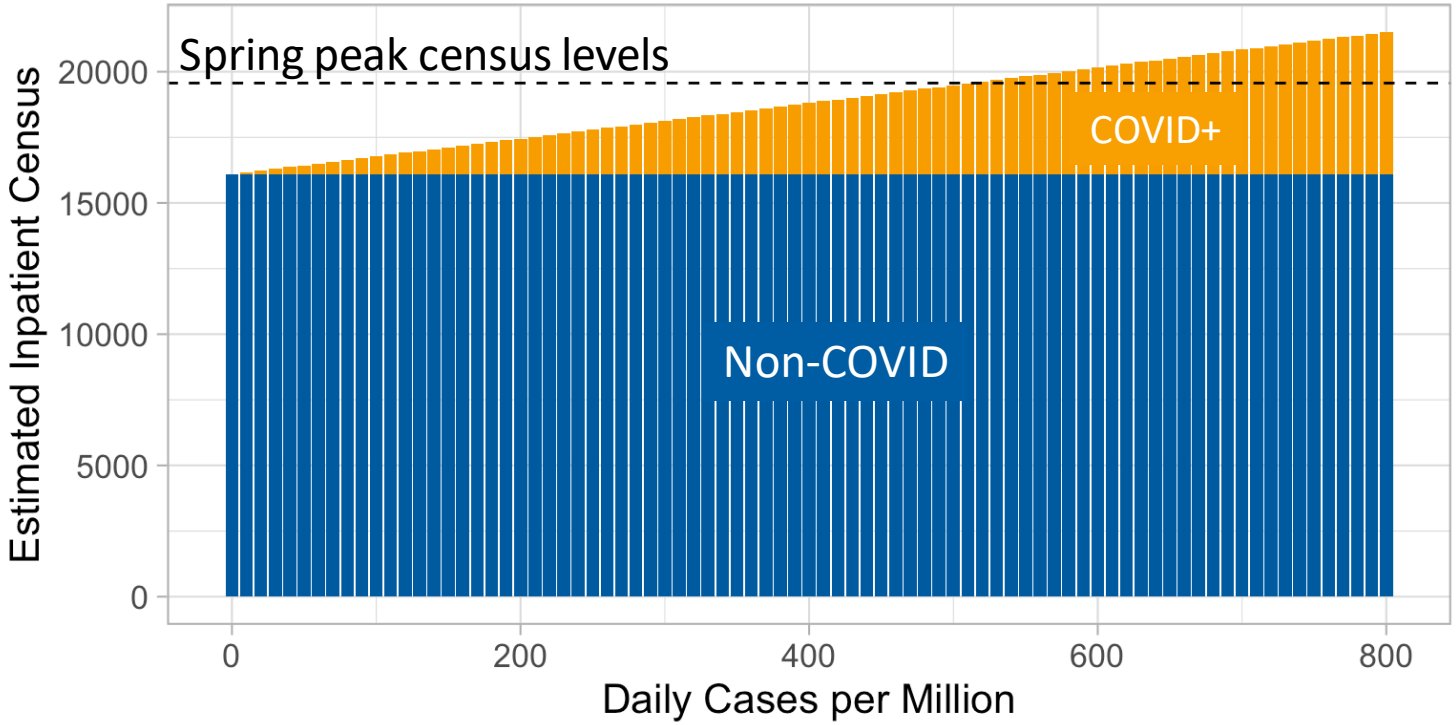
PUBLIC HEALTH

Data Sources: MDSS (case data as of 9/15/21), HHS Protect (hospital admissions and inpatient census data through 9/14/2021). New articles: Munson, Spectrum

Given the increase in non-COVID care, how do current cases translate to hospitalizations?

- Non-COVID census estimated based on average census levels over the last 30 days
- Assumes constant steady state case levels and hospitalization rate
- Translated case rate to inpatient census based on the case hospitalization rate and estimated length of stay over the last 30 days





PUBLIC HEALTH

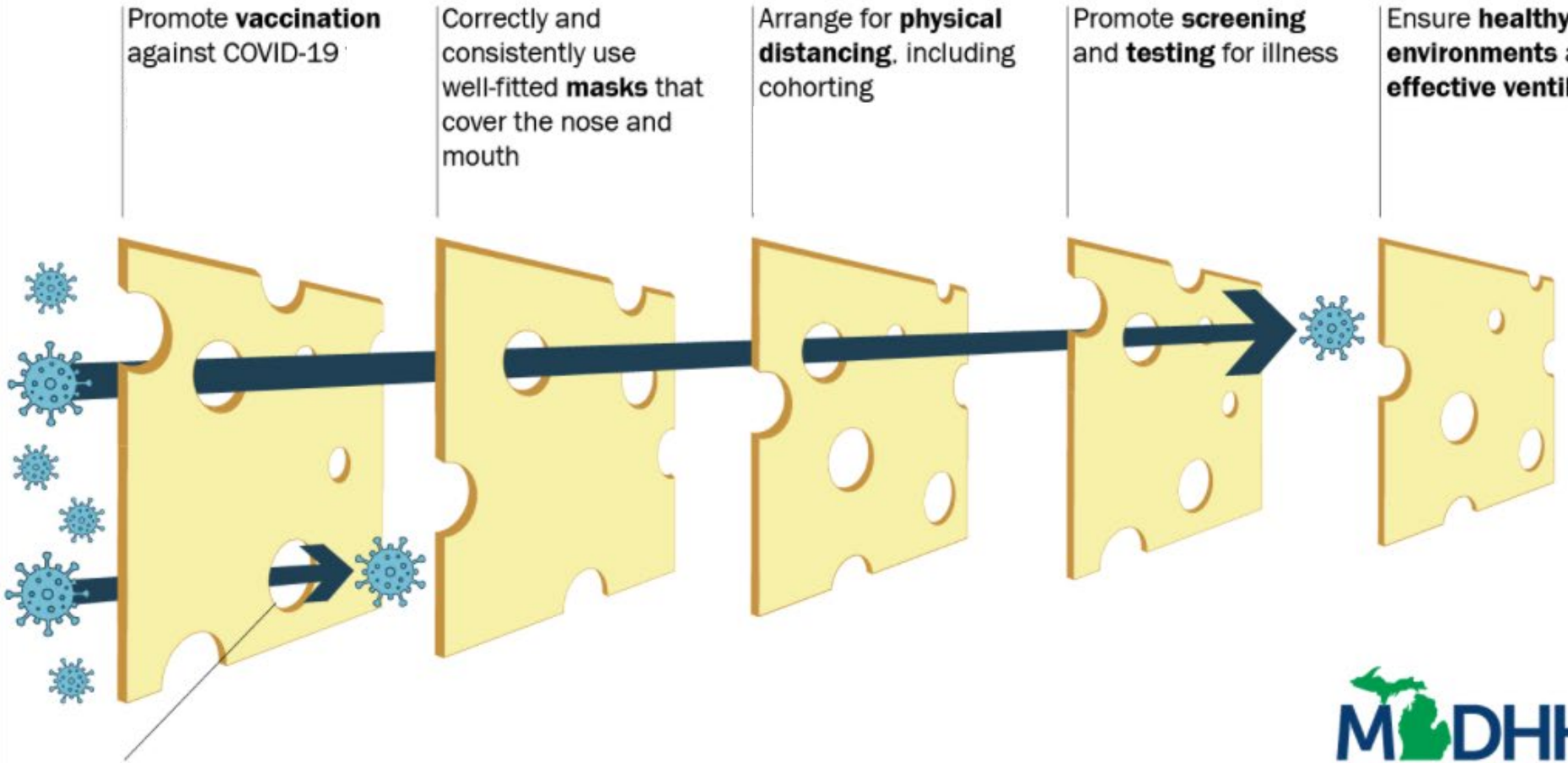
Data Sources: MDSS (case data as of 11/15/21), HHS Protect (hospital admissions and inpatient census data through 11/14/2021)

Layers of Defense Against COVID-19

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.



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

Safer Ways to Celebrate Holidays

Holiday traditions are important for families and children. There are several ways to enjoy holiday traditions and protect your health. Many generations tend to gather to celebrate holidays. Here are some ways to celebrate the holidays more safely:

- The best way to minimize COVID-19 risk and keep your family and friends safer is to **get vaccinated** if you're eligible.
- If you are sick or have symptoms, don't host or attend a gathering.
- Regardless of vaccination status, all those aged 2 or older, you should **wear a mask in indoor public places** in areas of substantial or high SARS-CoV-2 transmission and in crowded, poorly ventilated outdoor areas.
- **Before a multihousehold gathering, consider taking a rapid antigen test**, regardless of whether you've been in contact with someone with COVID-19; if you test positive, stay home until you consult your provider and rule out any possibility of infecting others.
- Consider a setting where people can spread out and where there can be good ventilation.
- If you are traveling for a holiday event, follow domestic and international travel guidelines and public health recommendations.
- Practice healthy hygiene – e.g., proper respiratory etiquette, wash your hands frequently, and avoid touching your face.
- People who have a condition or are taking medications that weaken their immune system may not be fully protected even if they are fully vaccinated. They should continue to take all precautions recommended for unvaccinated people, including wearing a well-fitted mask, until advised otherwise by their healthcare provider.
- Visit the CDC COVID-19 Safer Ways to Celebrate Holidays and Travel Guidelines for more information on how to keep yourself and your loved ones safe this holiday season.

Source: CDC Holiday Celebrations

Appendix

Update on surveillance with the K-12 setting and school cluster and outbreak definition

- As of 9/27/2021, MDHHS is utilizing the latest definitions for measuring outbreaks and clusters of COVID-19 in K-12 schools in accordance with the Council of State and Territorial Epidemiologists standards

- Surveillance case definitions are often modified over time as the epidemic evolves and more evidence are collected to better inform future surveillance practices and standards

- The new definition from CSTE has separate criteria for defining an outbreak and a cluster associated with a school setting while the previous definition **ONLY** included an outbreak definition
  - **Outbreaks** rely on confirming exposure linkages between cases
  - While **clusters** account for school cases where a definitive exposure linkage has not been established.
  - The previous outbreak definition threshold was 2 cases, while the new outbreak and cluster definitions requires 3 or more cases OR having multiple cases comprising at least 10% of a core school group.

- Previously, MDHHS reported out school related outbreaks only
- The new definition will not be applied to retrospective data
- Utilizing the new surveillance definition, MDHHS now reports both outbreaks and clusters in aggregate

- For consistency and transparency in public reporting, both clusters and outbreaks will be reported in aggregate as there are numerous barriers to identifying epidemiological or exposure linkages between cases, including:
  - Limited resources to perform comprehensive case investigations at the local level
  - Availability of school resources to participate in the case investigation process
  - Public engagement with investigators in the case investigation process