MI COVID RESPONSE DATA AND MODELING UPDATE

NOTE: All data as of Nov. 28 unless otherwise noted

December 1, 2020

Executive summary

Michigan has recorded the **6th highest number of cases (↓1)** , **3rd highest number of deaths (↑1)**, **20th highest case rate (↓1)**, and **6th highest death rate (↑7)** in the last 7 days (source: CDC COVID Data Tracker)

Michigan has the **7th highest hospitalization rate as a percent of total beds (↔)**, and **7th highest number of COVID patients in the ICU (↓1)** (source: Becker's Hospital Review)

Case rates (610.0, ↓63.2), **percent positivity** (12.8%, ↓0.7%), and **coronavirus like illness** (CLI) are all decreasing for most recent 7 days

More than 18.6% of available inpatient beds are filled with COVID patients and state trends for hospitalizations for COVID continue to increase for the previous 7 weeks

There were **579 deaths** (↑164) during the week of Nov 15-Nov 21 and the state death rate is **8.0 deaths/million/day**

Daily diagnostic tests averaged 62.2K per day over the last week and the state rate is **6,363.1 tests/million/day**

Comparison across states: Summary

What we see today:

- 25 states seeing increasing 2-week case trends (down from 46 last week)
- 46 states (stable) with significant outbreaks (high/increasing cases, increasing/high positivity, increasing/high hospitalizations over 2 weeks (>100 per M))
- South Dakota, Indiana, Nevada, Nebraska, Illinois, have highest per capita hospitalized patient numbers
- Most rapid 2-week case growth: CA, VA, AZ, WA, NV
- Midwest:
  - Wisconsin showing decline in hospitalizations (310/M), declining cases (800/M)
  - Indiana now in #2 in hospitalized per capita (504/M), cases down slightly >800/M – exceeded spring peak
  - Illinois remains in top 5 in hospitalized per capita (462/M), cases down >700/M – exceeded spring peak
  - Ohio with growing hospitalizations (420/M), cases >770/M – far above spring levels
  - Michigan with slower growth in hospitalizations (380/M), flat/ slight decline in cases ~700/M

Confirmed and probable case indicators

Table Date: **2020-11-25**, 7 days from date table was produced (2020-11-21)

Risk levels: Low A B C D E

	MERC Region Number	Public Health Region	Overall Risk Level	Absolute cases (per million)	CDC Case Trend	Average percent positivity	Positivity trend	Tests per million	Weekly % CLI cases	Weekly % CLI cases trend	% inpatient beds occupied by COVID-19 cases	Absolute deaths (per million)	Death trend
Detroit	1	2N + 2S	E	588.9	decline [7 days]	12.7	Decrease - 1wk	5953.4	1.1	Increase - 1wk	18.0	5.7	Increase - 8wk
Grand Rapids	2	6	E	712.3	decline [11 days]	14.1	Decrease - 1wk	7220.0	2.0	Increase - 6wk	18.9	11.3	Increase - 6wk
Kalamazoo	3	5	E	644.6	decline [10 days]	14.8	Decrease - 1wk	6020.9	1.8	Increase - 1wk	18.0	7.6	Decrease - 1wk
Saginaw	4	3	E	654.3	decline [10 days]	13.3	Increase - 8wk	6120.3	1.1	Decrease - 1wk	26.2	13.1	Increase - 3wk
Lansing	5	1	E	501.8	decline [10 days]	10.4	Decrease - 1wk	5309.0	0.6	Decrease - 1wk	18.5	7.8	Increase - 1wk
Traverse City	6	7	E	452.9	decline [9 days]	10.9	Increase - 1wk	4718.8	2.0	Increase - 1wk	14.0	9.1	Increase - 1wk
Jackson	7	1	E	715.7	elevated incidence plateau	12.1	Increase - 5wk	8986.5	0.8	Increase - 2wk	24.0	8.0	<20 wkly deaths
Upper Peninsula	8	8	E	596.7	decline [13 days]	10.1	Increase - 4wk	7346.4	1.1	Decrease - 2wk	15.0	22.1	Increase - 1wk
Michigan			E	610.0	decline [9 days]	12.8	Decrease - 1wk	6363.1	1.3	Increase - 11wk	18.6	8.0	Increase - 10wk

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%

1. Epidemic curve classification based on two-week incidence slope. Data omits most recent week to account for lag period.

COVID-19 Spread

Positivity has plateaued statewide and within most regions but remain over 10 percent in most regions

- Testing continues to increase throughout the state although there was a dip over the holiday weekend
- Testing has averaged over 6,000 tests per million people since mid-November

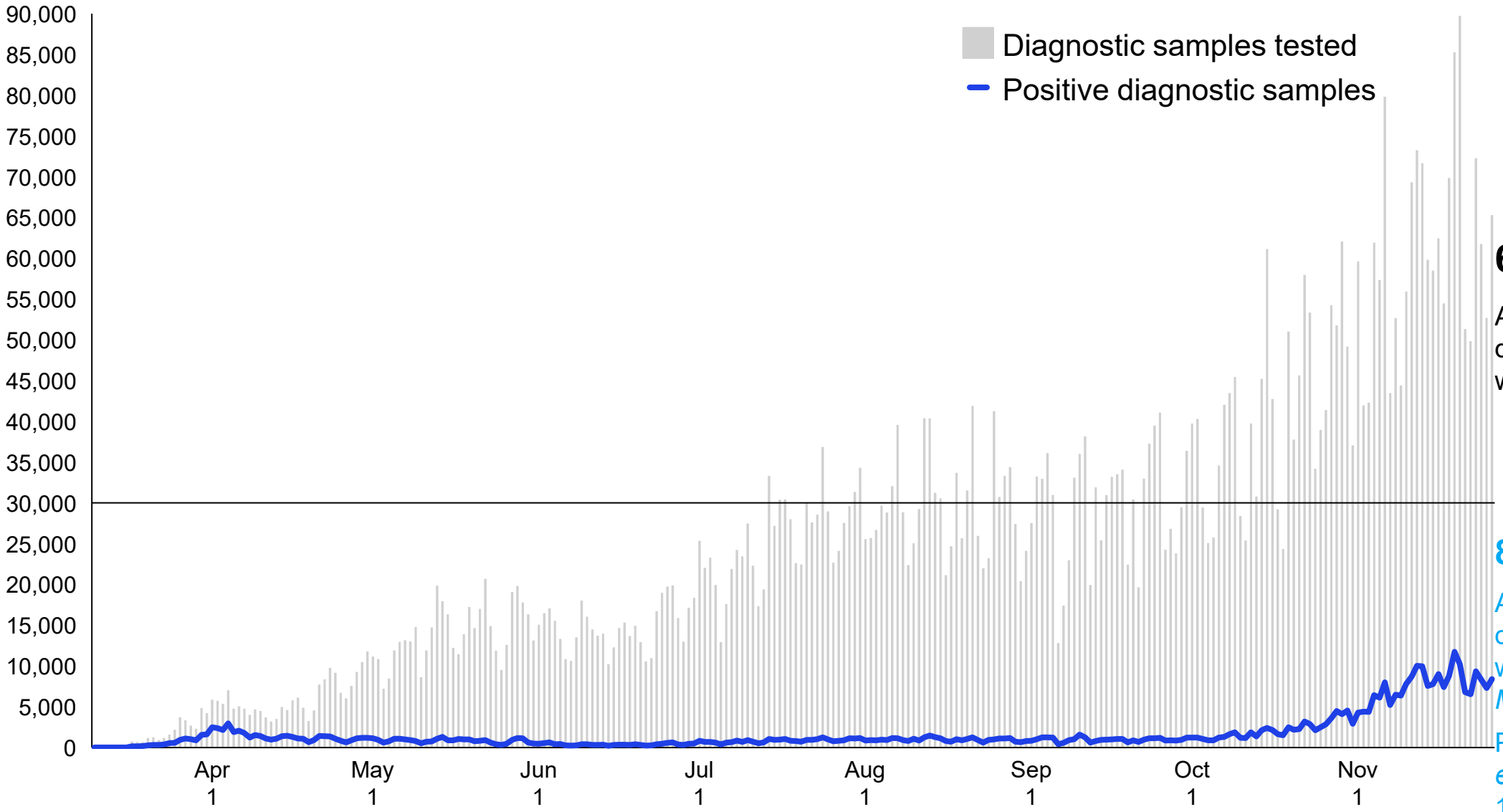
Cases have declined for the first time since May

- All MERC regions and the state are still over 450 cases/million
- Caution with extrapolating these trends going forward as we may well see post-holiday spike

Deaths continue to increase

- On Thursday, Nov 24, there were 101 deaths reported, the highest number since April 30
- Nine percent of COVID deaths reported in the previous 30 days were among those under the age of 60
- Disparities in deaths exist among minority groups even after adjusting for age and sex

Daily diagnostic tests and positive diagnostic tests, by message date



66,216

Average daily diagnostic tests (past week)

8,605 (13.1%)

Average positive diagnostic tests (past week, *includes MDOC*)

Percent positivity *excluding* MDOC is 13.5%

Source: MDSS/Michigan Medical Advantage Group, MDHHS, testing labs

Testing Turn Around Time: Collection to report

Time from sample collection to result being received by MDHSS over the last two weeks will reported on Thursdays on Michigan.gov/coronavirus, including:

- Summary (see below)
- Turn around times for individual laboratories
- Future: preparedness region as well

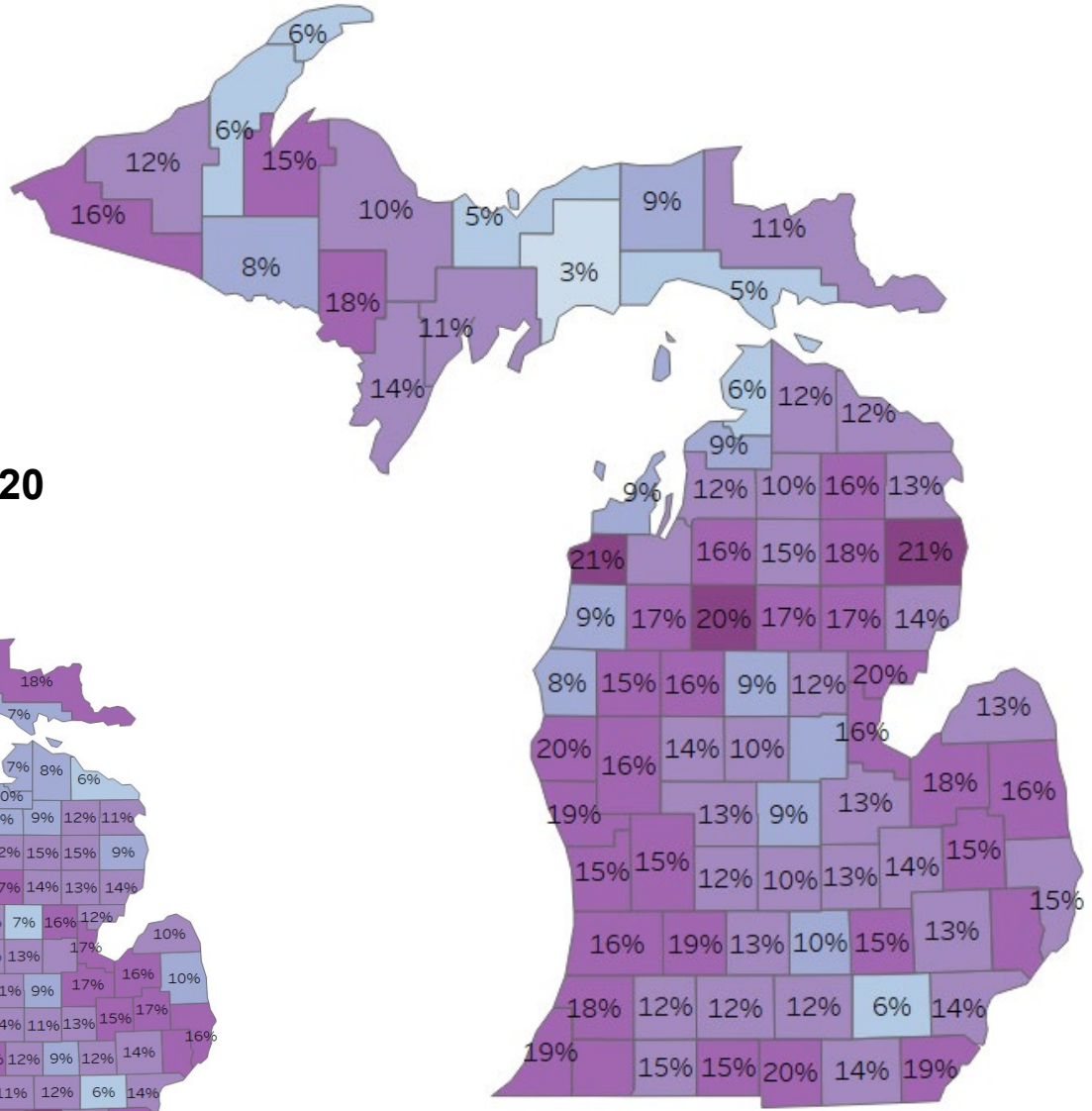
Summary

- Last two weeks nearly 1M tests, ~67% from commercial laboratories
- Less than a day transport time (from test collection to receipt by the laboratory)
- Average turn around time 2.82 days

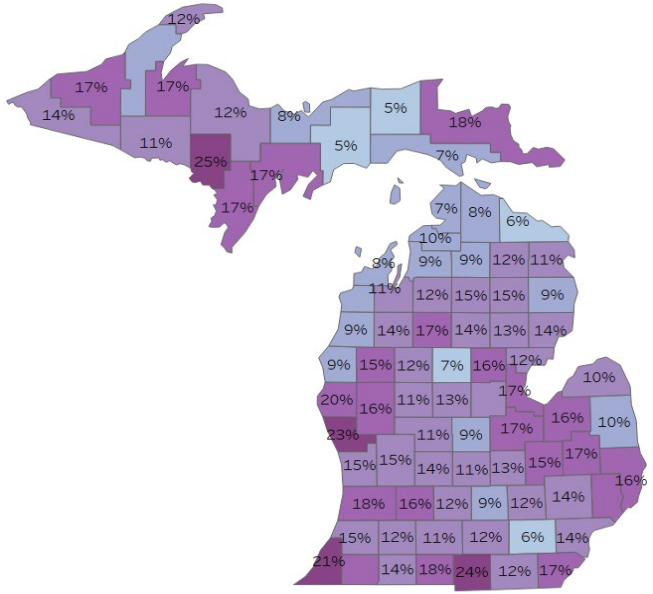
Estimated Turnaround Times for COVID-19 Diagnostic Testing Results Received at MDHHS During Last 14 Calendar Days (through 11/26/2020)

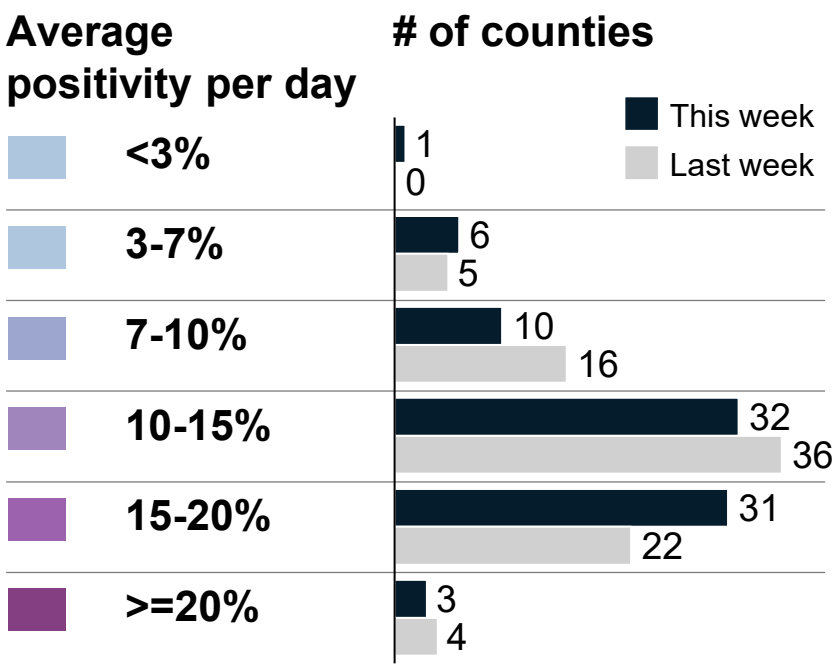
Lab Type	Test Count	Transport Time (Days)	Total Turn Around Time (Days)
Commercial	660,343	1.03	3.18
Hospital	309,180	0.59	2.20
Public Health	8,619	0.45	2.03
State Total	**978,142**	**0.80**	**2.82**

Positivity by county, 11/21-11/27



Last week, 11/14-11/20





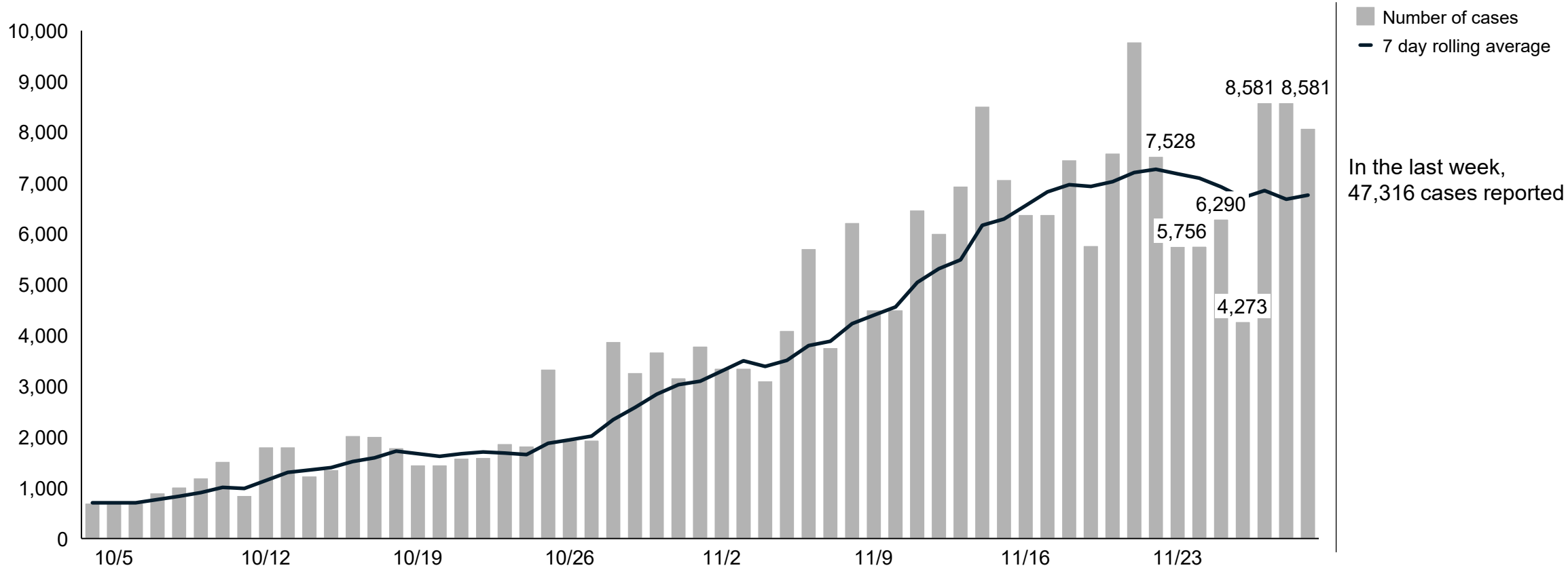
Updates since last week:

66 of 83 counties saw double digit positivity in the last week

Source: SEOC Testing Results – Excluding MDOC

Confirmed COVID-19 cases by report date: State of Michigan

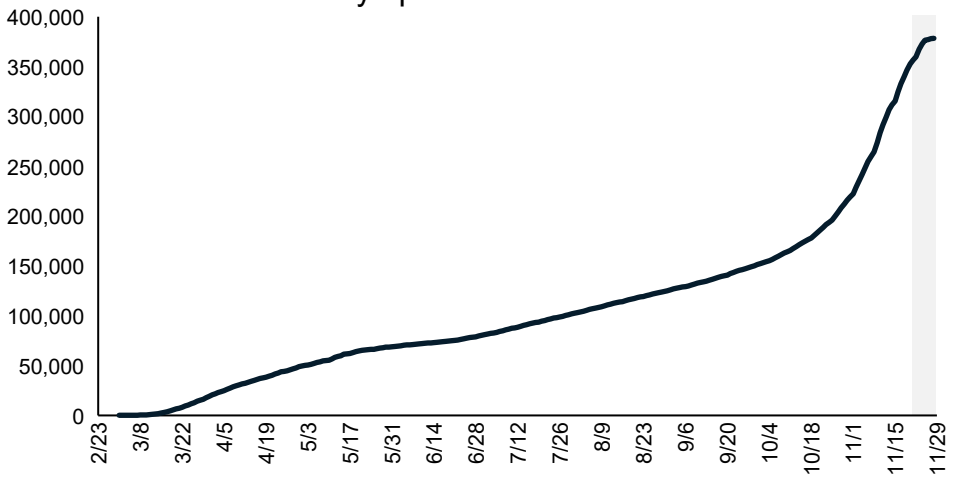
Confirmed cases reported on prior day (7-day rolling average)



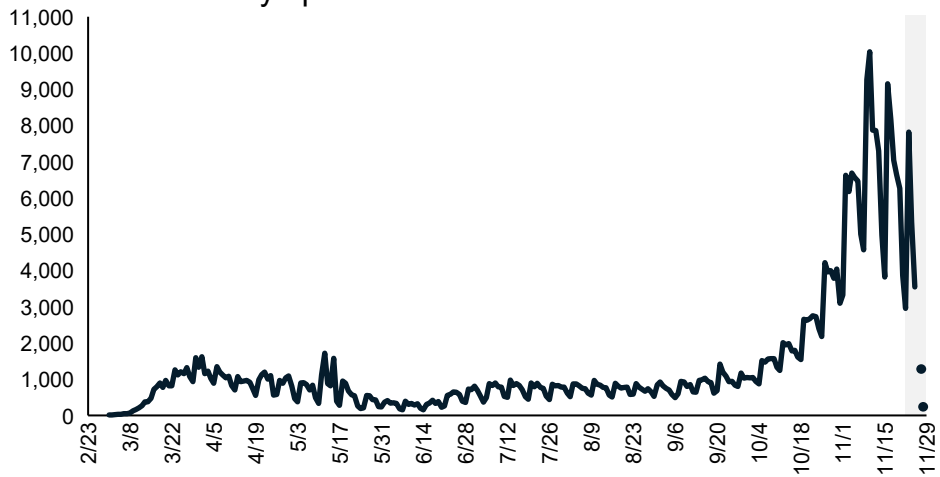
Source: MDHHS – Michigan Disease Surveillance System

COVID-19 cases and deaths by onset date: State of Michigan

Cumulative confirmed and probable cases, by date of onset of symptoms



New confirmed and probable cases, by date of onset of symptoms

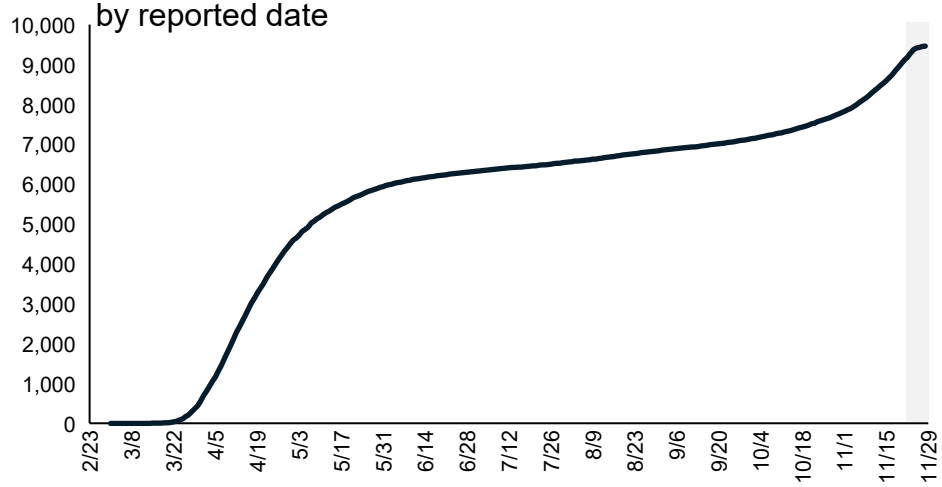


Updates since last week:

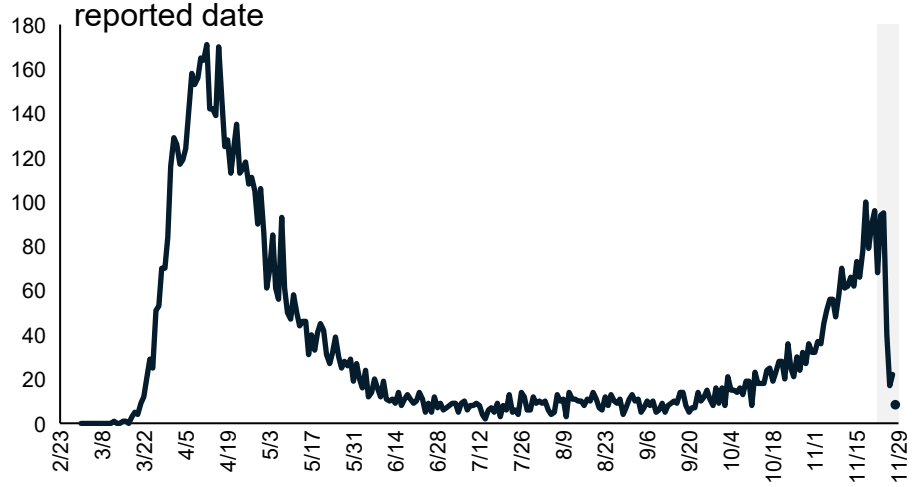
Cases have decreased in the last week

Current daily case rate remains 6x the rate from early October

Cumulative confirmed and probable deaths, by reported date



New confirmed and probable deaths, by reported date



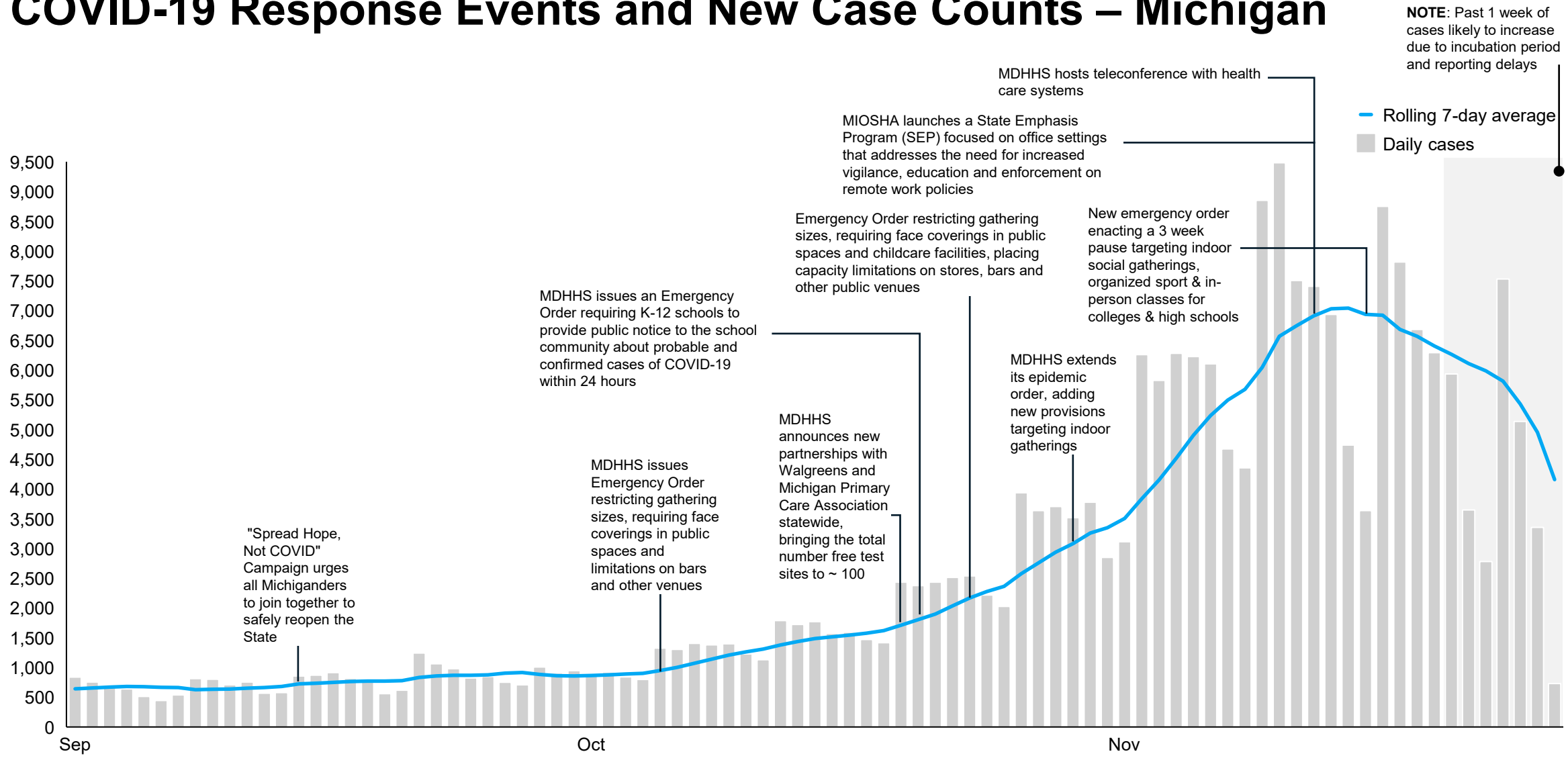
Updates since last week:

Current deaths are a lagging indicator of cases and are continuing to climb.

The current number of deaths is 7x the amount of deaths in early October

Note: Cases information sourced from MDHHS and reflects date of onset of symptoms (refers to lab-confirmed cases). Case spike on 5/12 is a result of batch of test results, not all of which have onset date of symptoms completed
Source: MDHHS – Michigan Disease Surveillance System

COVID-19 Response Events and New Case Counts – Michigan



Source: MDHHS – Michigan Disease Surveillance System; Johns Hopkins Coronavirus Resource Center https://coronavirus.jhu.edu/data/state-timeline/new-confirmed-cases/michigan/91 accessed 11/30/20

Lag Between Intervention and Case Reporting

Illustrative Model – Periods of Infectivity may vary

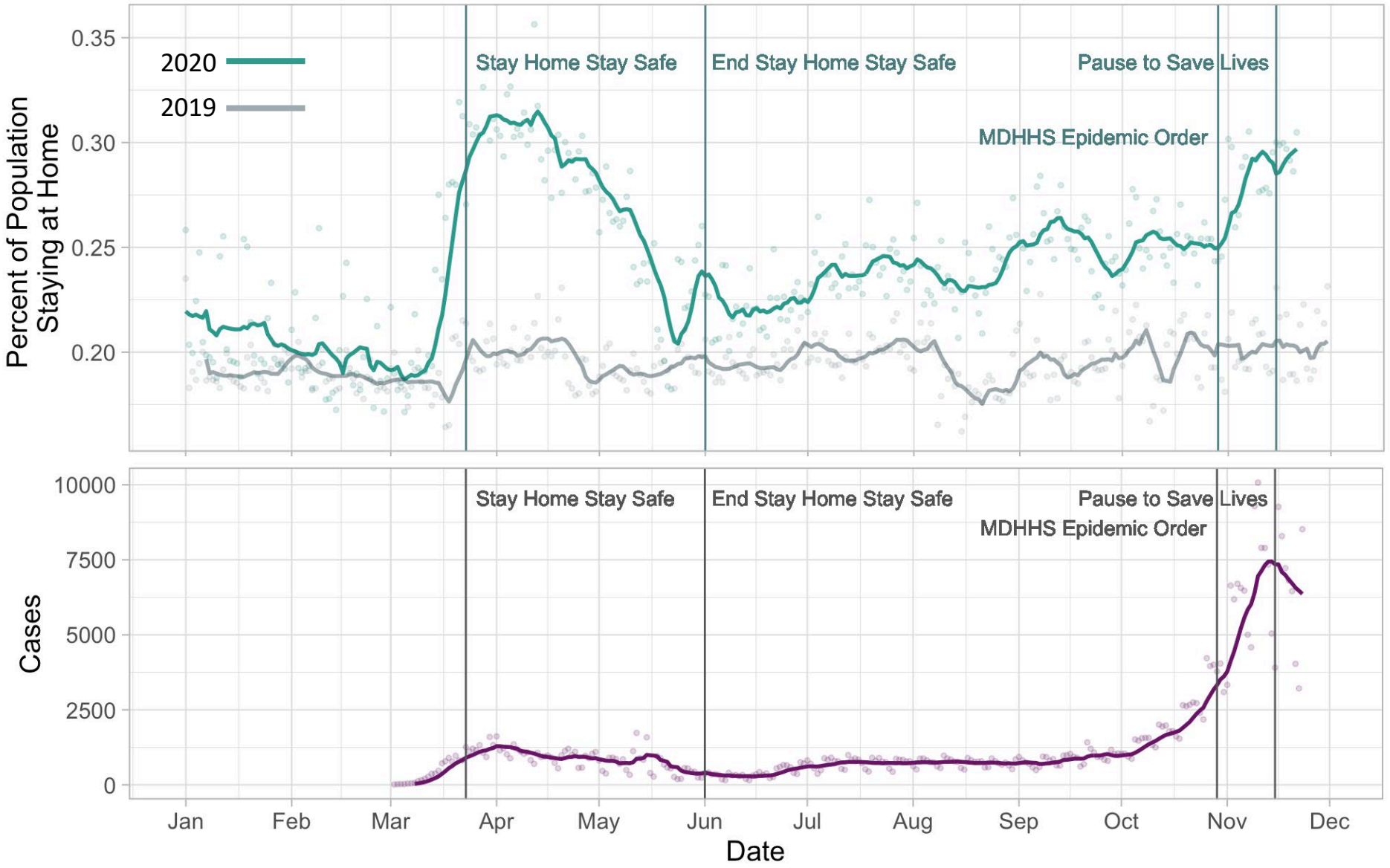
No Intervention

Day	Index Case	Person 1	Person 2	Person 3
1	No Change	Exposed		
2				
3				
4				
5			Exposed	
6		Sick		
7				
8		Tested		
9				Exposed
10			Sick	
11		Report		
12			Tested	
13				
14				Sick
15			Report	
16				Tested
17				
18				
19				Report
20				
21				
22				

Positive Intervention

Day	Index Case	Person 1	Person 2	Person 3
1	Change			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11		No Report		
12				
13				
14				
15			No Report	
16				
17				
18				
19				No Report
20				
21				
22				

How many people are staying at home in Michigan?



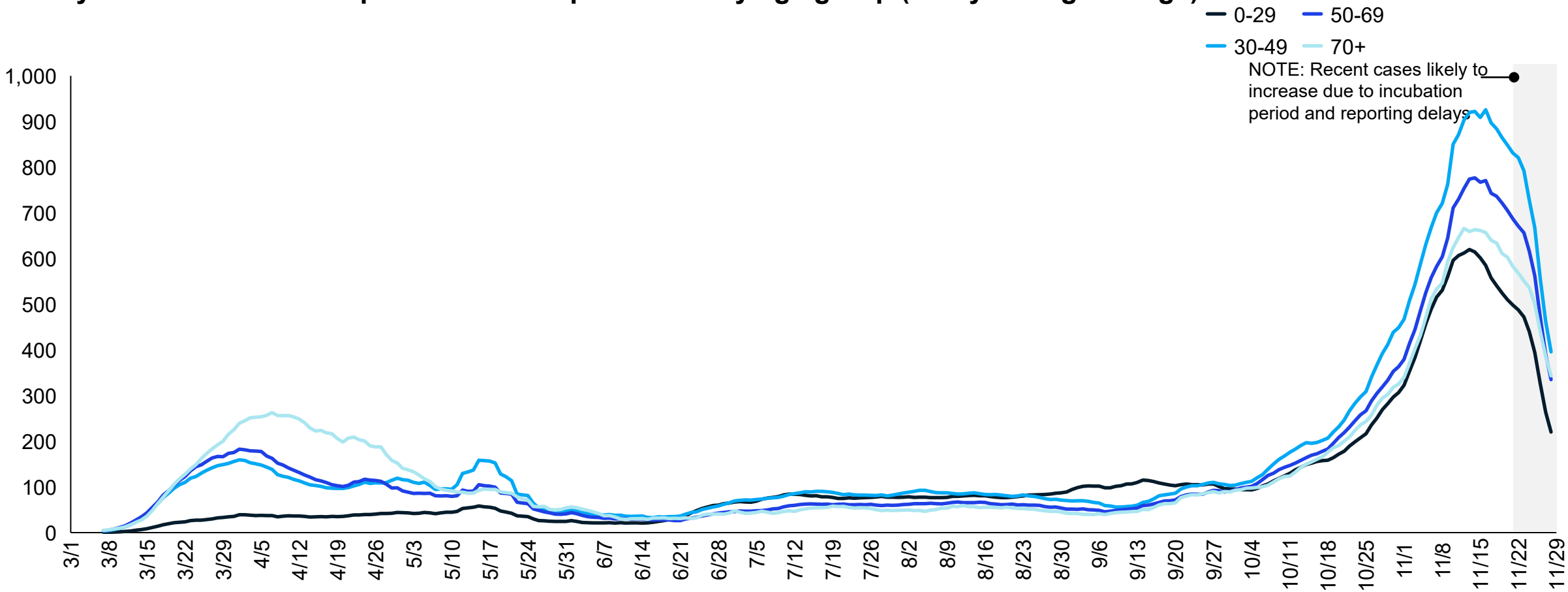
- Stay-at-home levels have recently increased
- Overall increase compared to 2019
- Continue to track to see impact of thanksgiving (most recent data is 11-21)

Data Sources: Bureau of Transportation Statistics, MDHHS

PUBLIC HEALTH

Average daily new cases per million residents, by age group

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

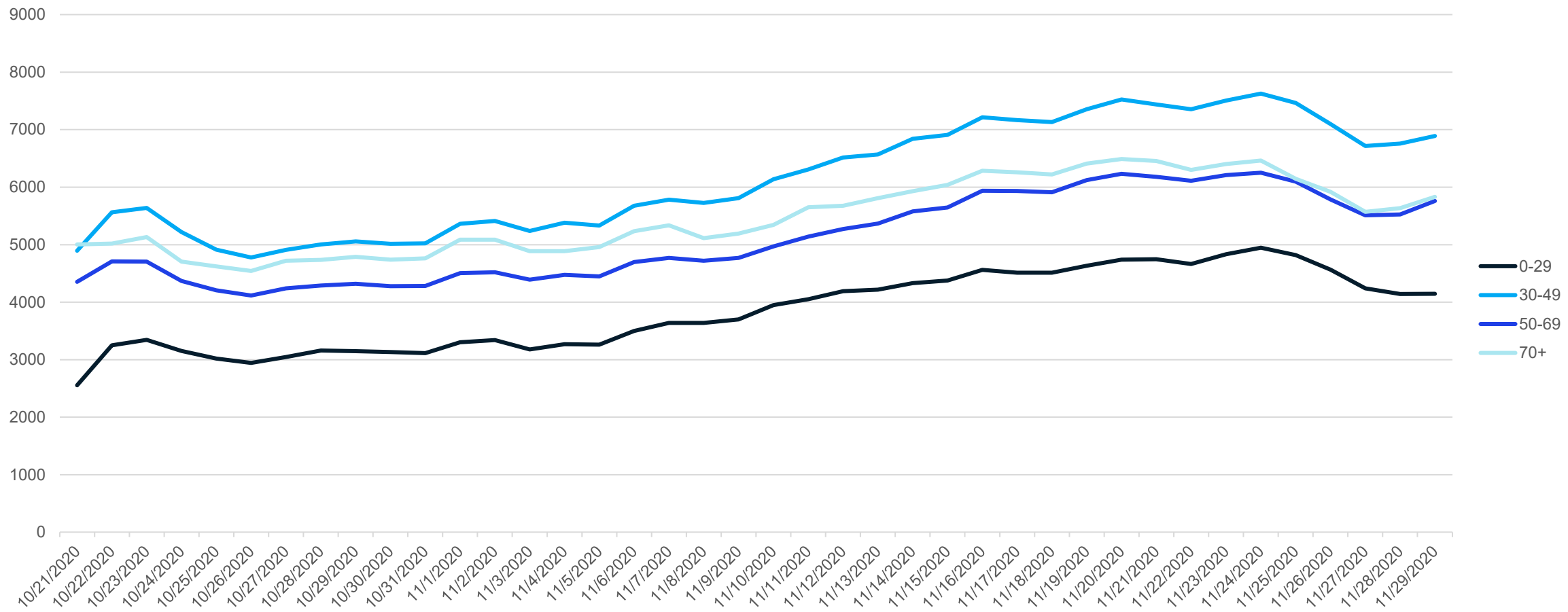


30-49 age group continues to have the highest cases per million, though cases per million have increased for all age groups

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

Average* daily new tests per million residents, by age group

* Seven-day rolling average



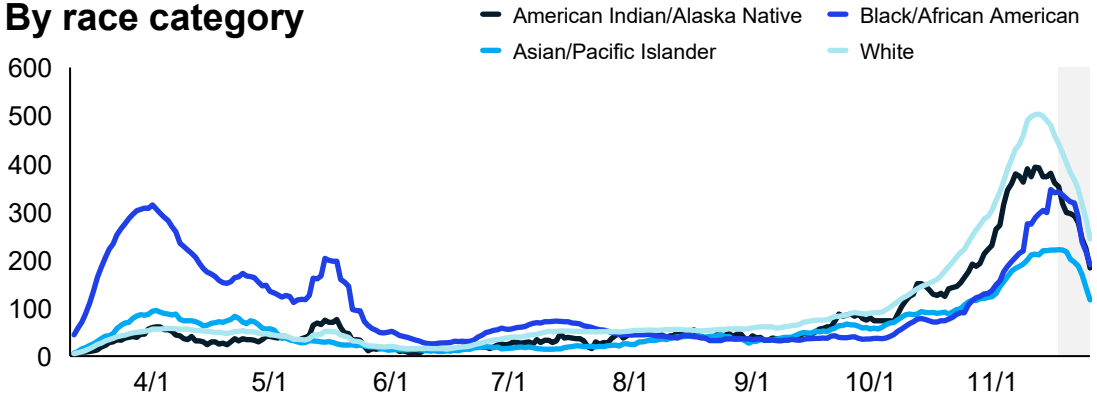
- Testing per capita is highest among individuals aged 30-49 years and lowest among those < 30 years

Note: Testing information sourced from MDHHS and cleaned by Medical Advantage Group
Source: MDHHS – Michigan Disease Surveillance System

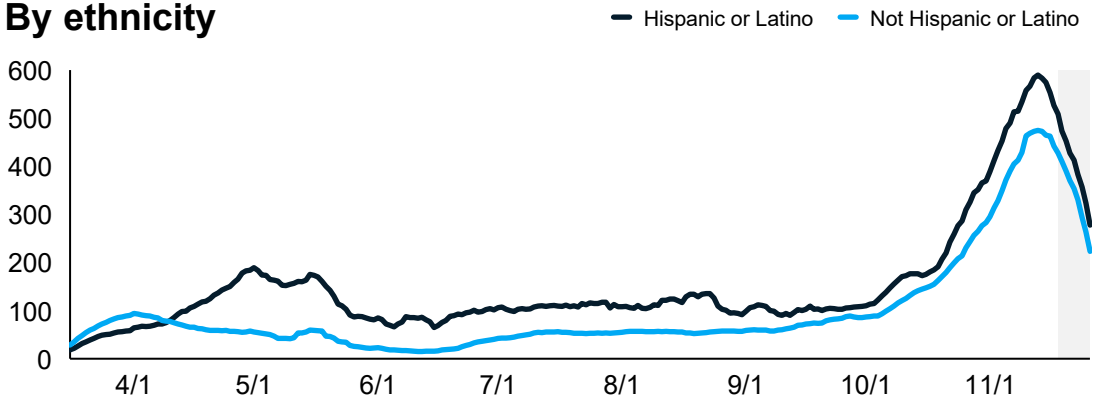
Average daily new cases per million people by race and ethnicity

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

By race category

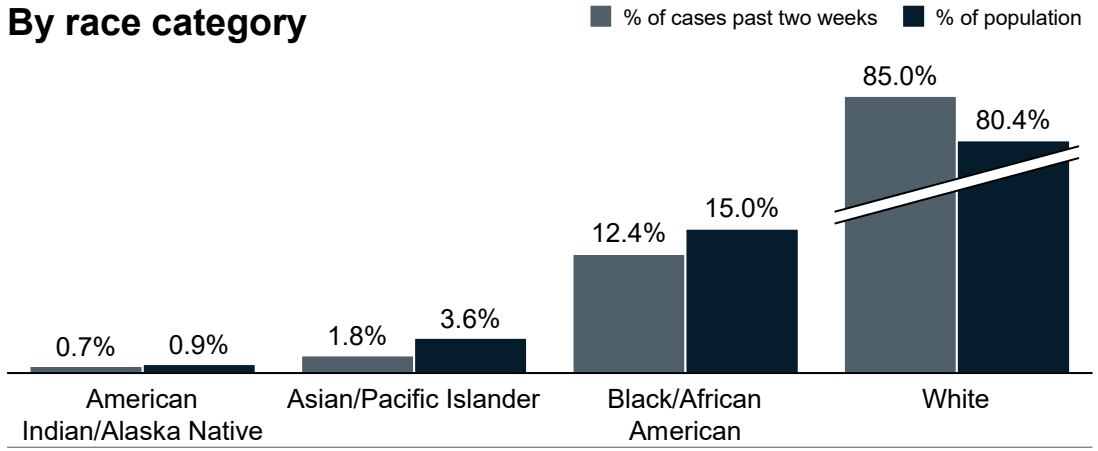


By ethnicity

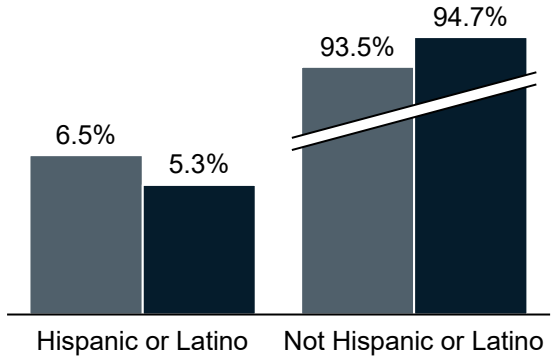


Past two weeks confirmed and probable cases vs. population, % of total

By race category



By ethnicity

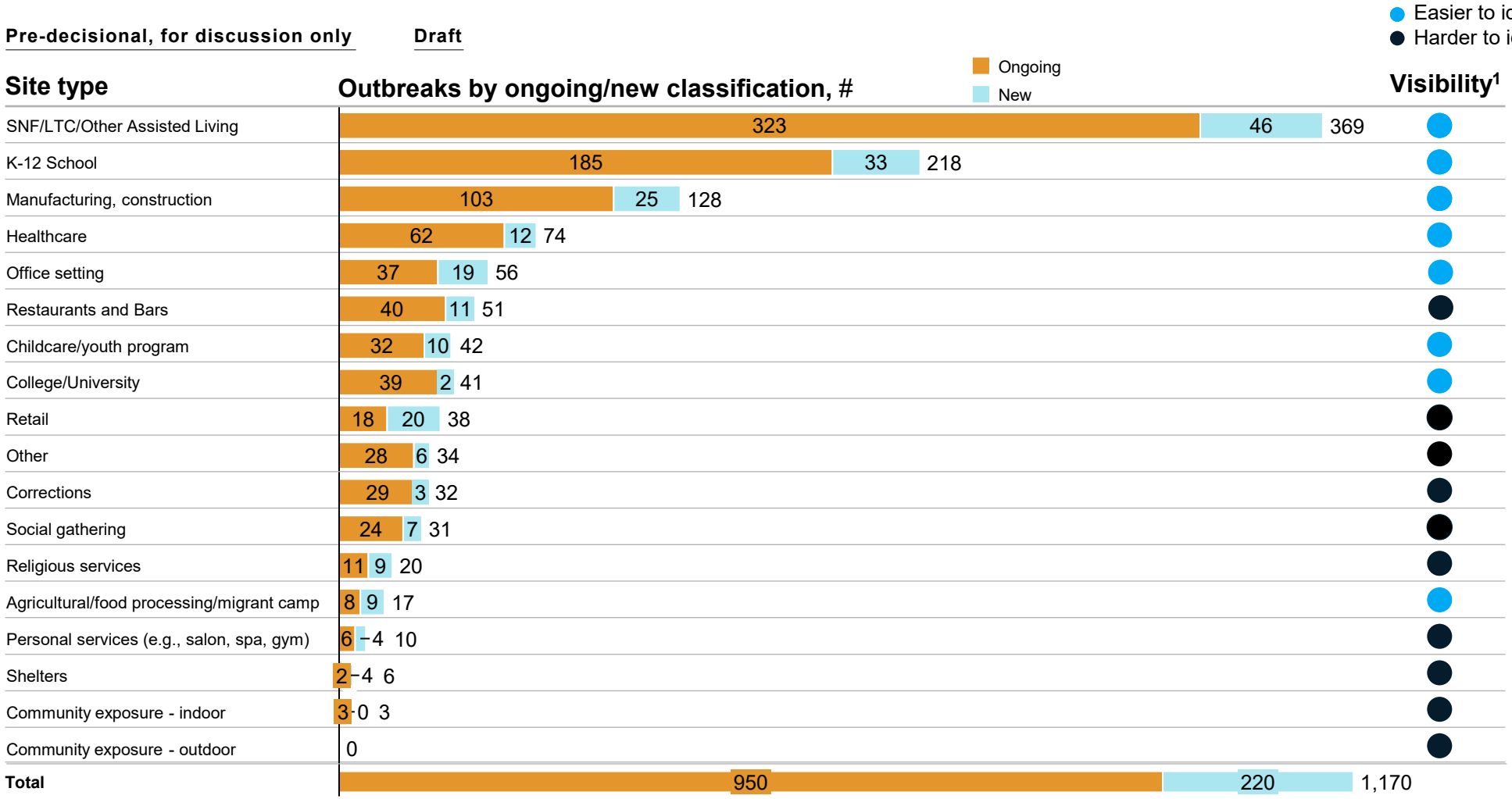


Note: Cases information sourced from MDHHS and reflects date of onset of symptoms; note that Multiple Races, Other, and Unknown race/ethnicity are not included in calculations

Source: MDHHS – Michigan Disease Surveillance System

Number of outbreak investigations by site type, week ending Nov 25

Pre-decisional, for discussion only **Draft**



New outbreaks decreased 29% from previous week

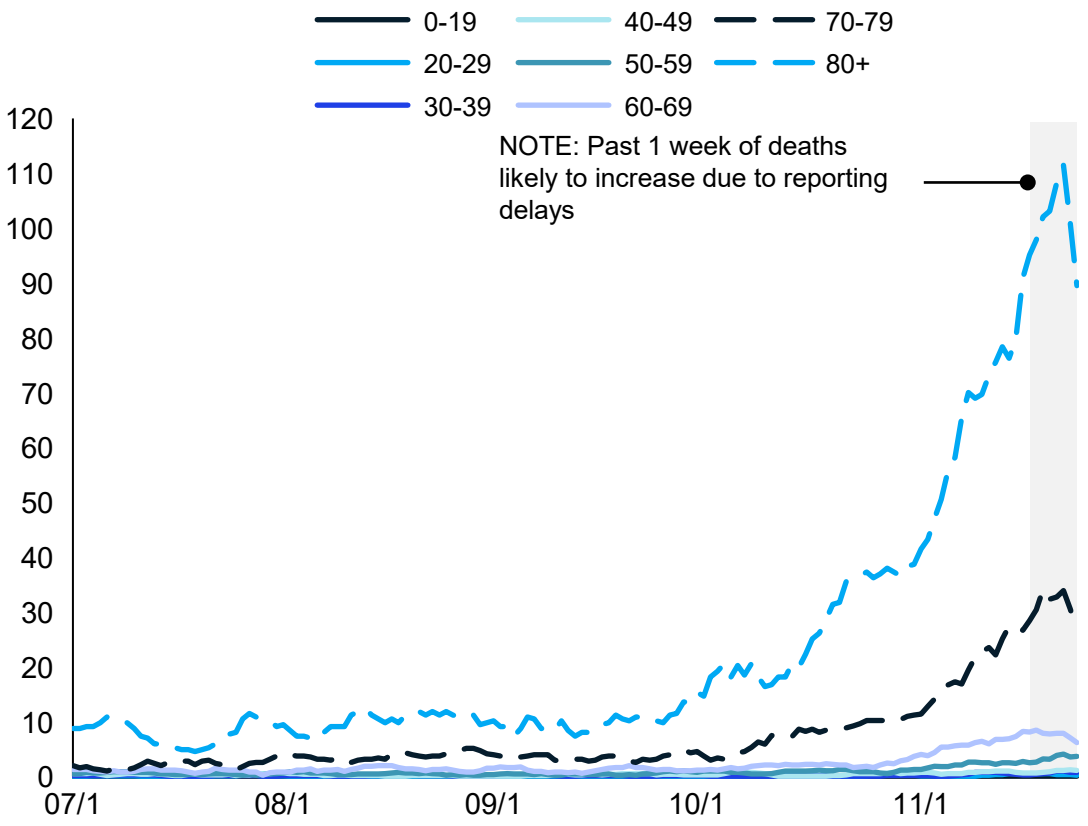
Following LTCs and K-12 educational settings, greatest number of new outbreaks reported in manufacturing/ construction, retail, offices, health care, restaurants/bars, and childcare.

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

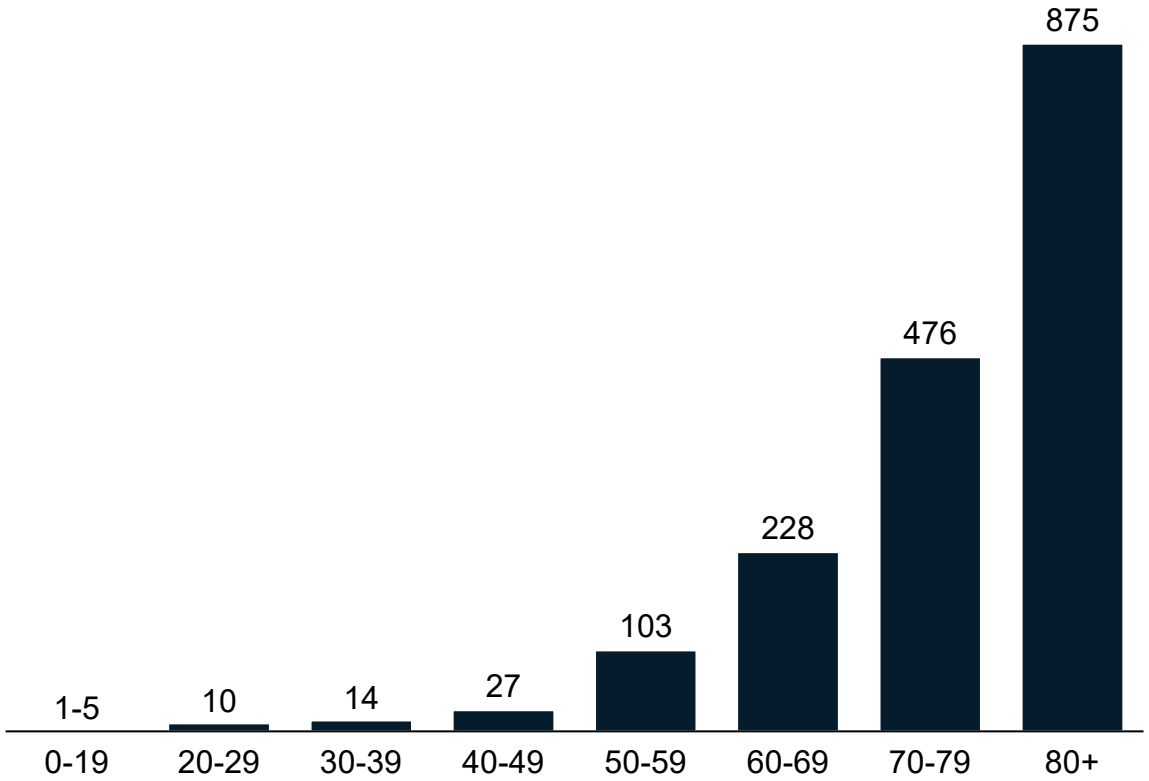
NOTE: Many factors, including the lack of ability to conduct effective contact tracing in certain settings, may result in significant underreporting of outbreaks. This chart does not provide a complete picture of outbreaks in Michigan and the absence of identified outbreaks in a particular setting in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

Average and total new deaths, by age group

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



Total new confirmed and probable deaths by age group (past 30 days, ending 11/28)



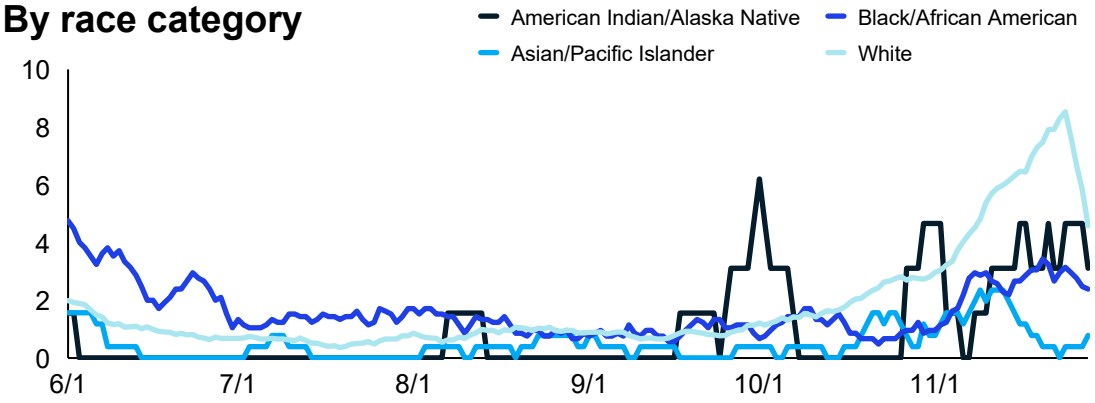
Note: Cases information sourced from MDHHS and reflects date of report

Source: MDHHS – Michigan Disease Surveillance System

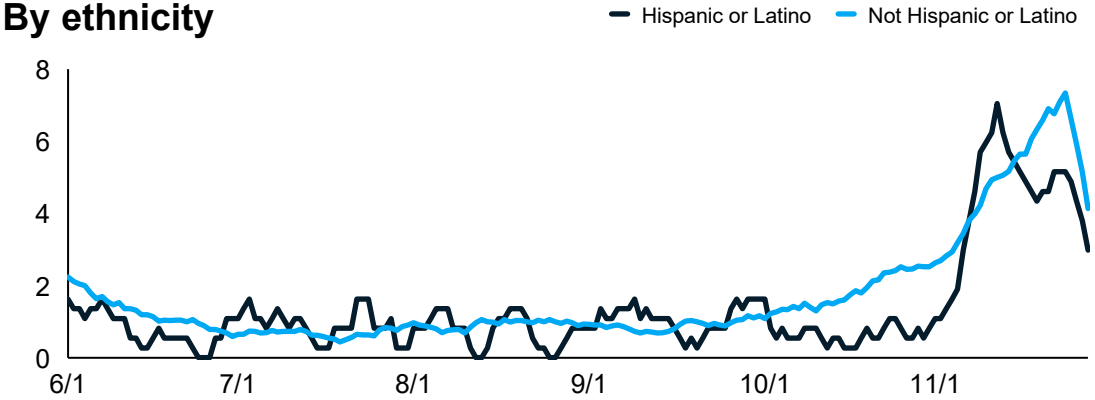
Average daily new deaths per million people by race and ethnicity

Daily new confirmed and probable deaths per million (7 day rolling average)

By race category

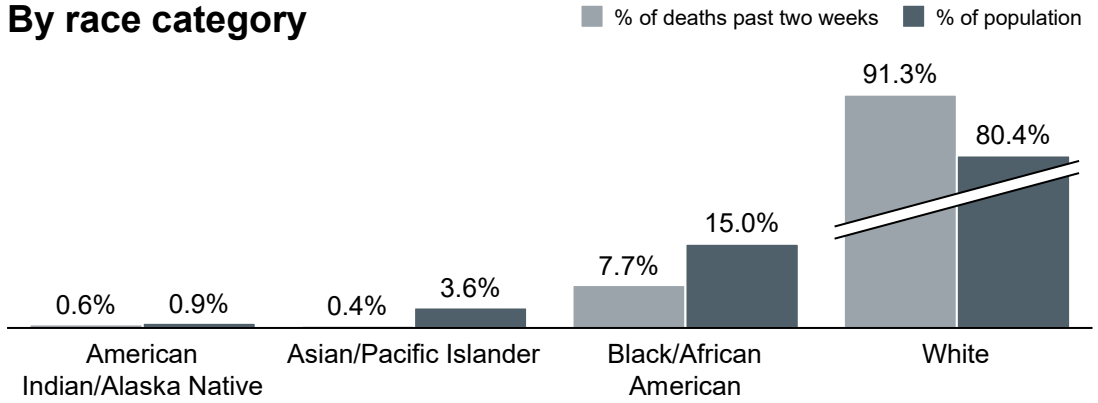


By ethnicity

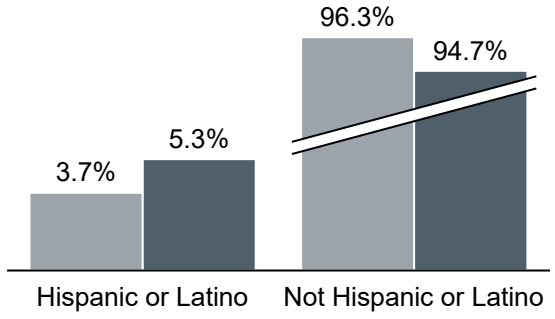


Past two weeks confirmed and probable deaths vs. population, % of total

By race category



By ethnicity

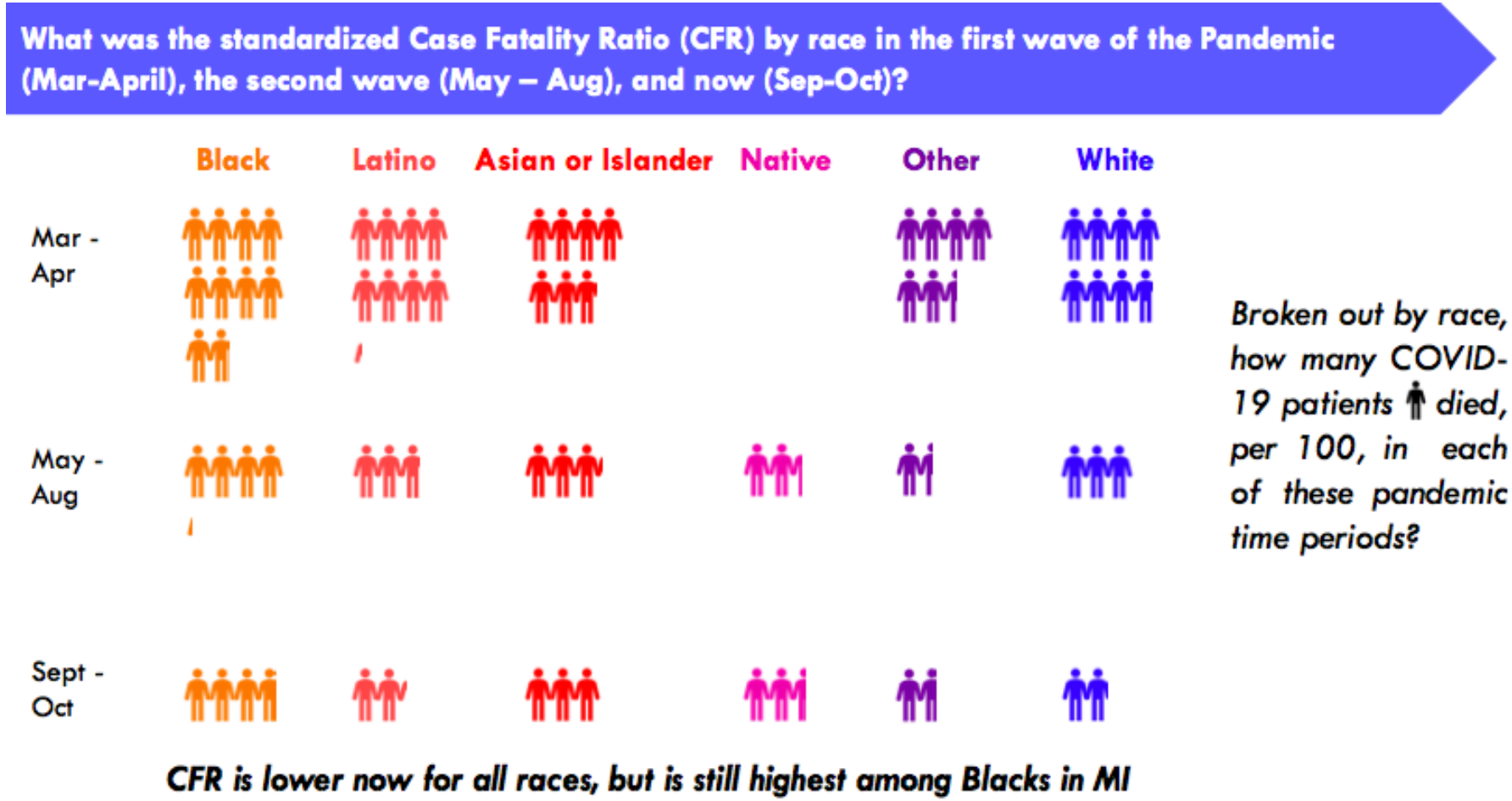


Note: Multiple Races, Other, and Unknown race/ethnicity are not included in calculations
Source: MDHHS – Michigan Disease Surveillance System

Standardized Case Fatality Ratio

Deaths per 100 cases adjusted for age and sex

- Standardized case fatality rate account for differences among racial groups
  - ➢ Better comparisons *between* groups and reduces potential confounding
- Lower case fatality rates were seen later in the pandemic, in part due to improve medicine and increased testing
- Disparities continue to exist, with Black Michiganders experiencing the greatest burden



COVID-19 and Healthcare Capacity

Since September, COVID-19-like illness has gone from < 2% to > 8% of the emergency department visits

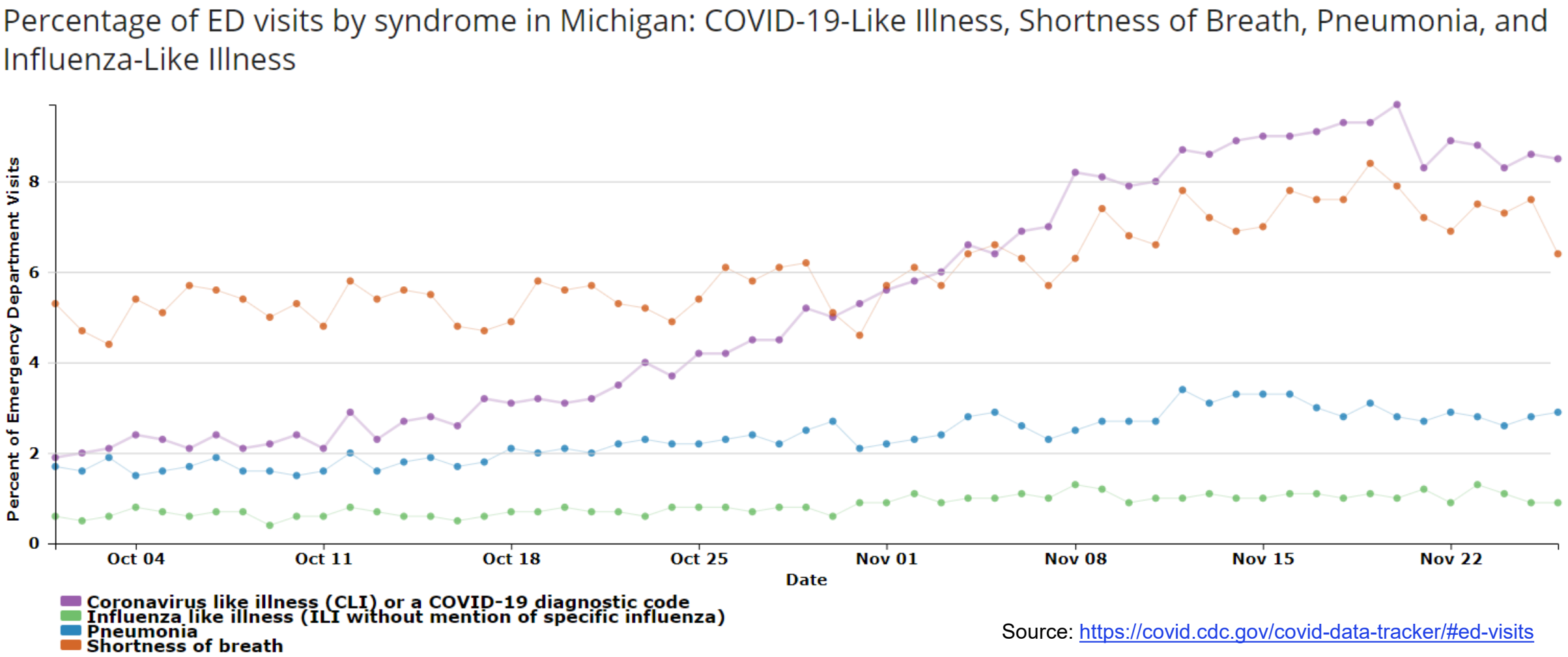
- CLI has decreased from last week's report but remains steady over the past 7 days

Hospitalization trends are at slower growth for the second week in a row

- ICU state trend has flattened over the last week
- Three MERC regions show a decrease in hospitalizations

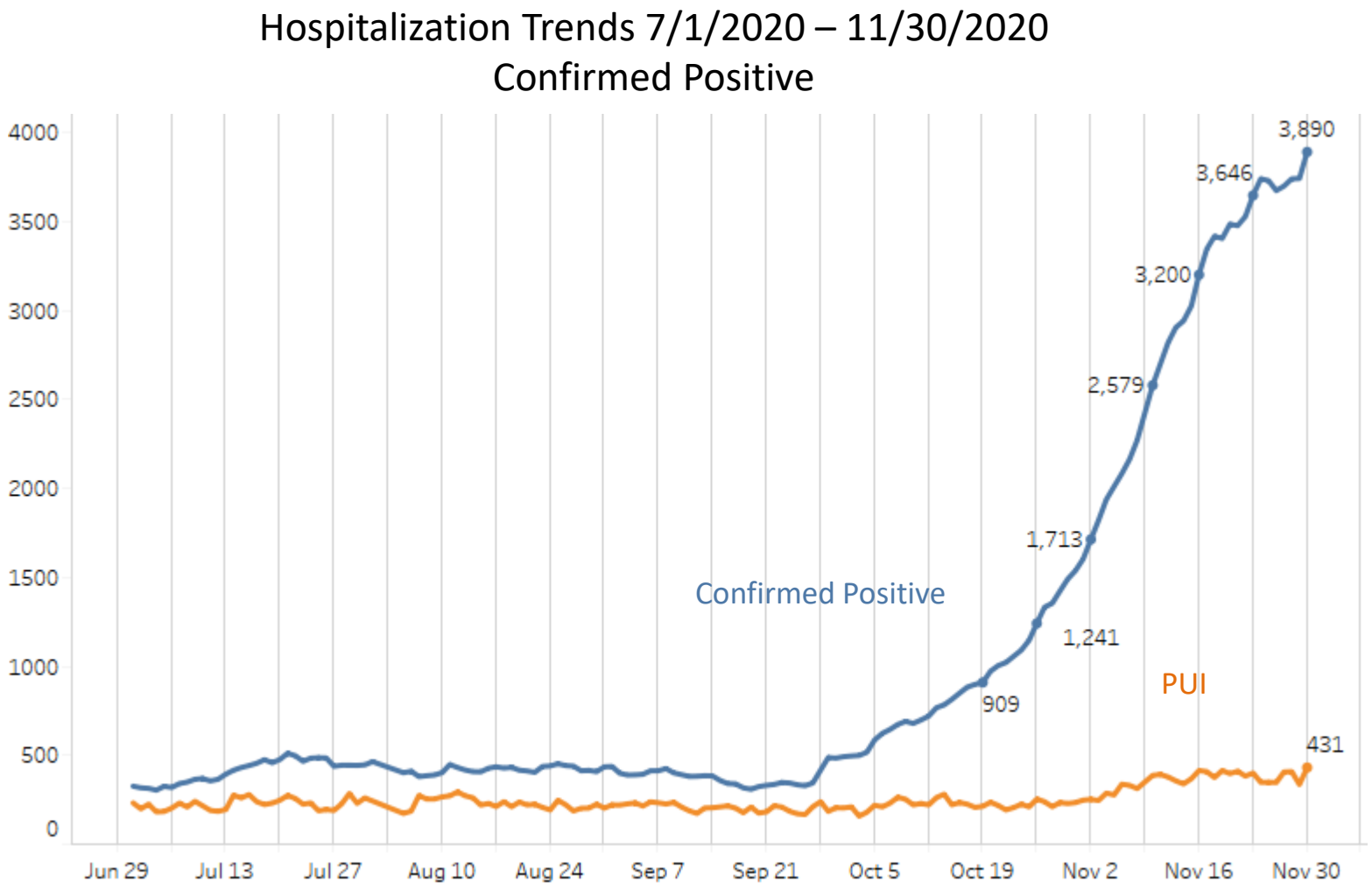
Five of eight regions have over 30% of Adult ICU beds occupied with COVID+ patients

Michigan Trends in Emergency Department Visits for COVID-19-Like Illness (CLI)



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

Statewide Hospitalization Trends: Total COVID+ Census

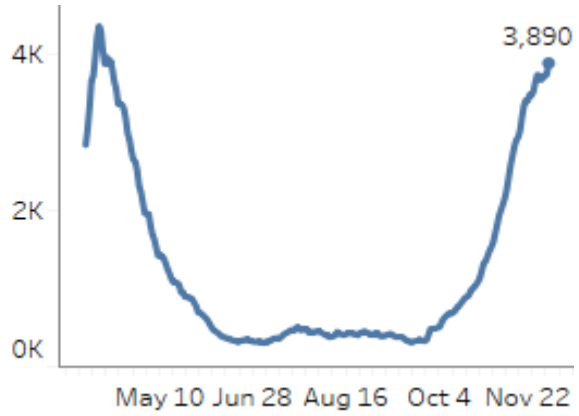


This week, hospital COVID+ census is 7% higher than last week (vs. 14% growth week prior)

We are now at ~90% of our spring peak.

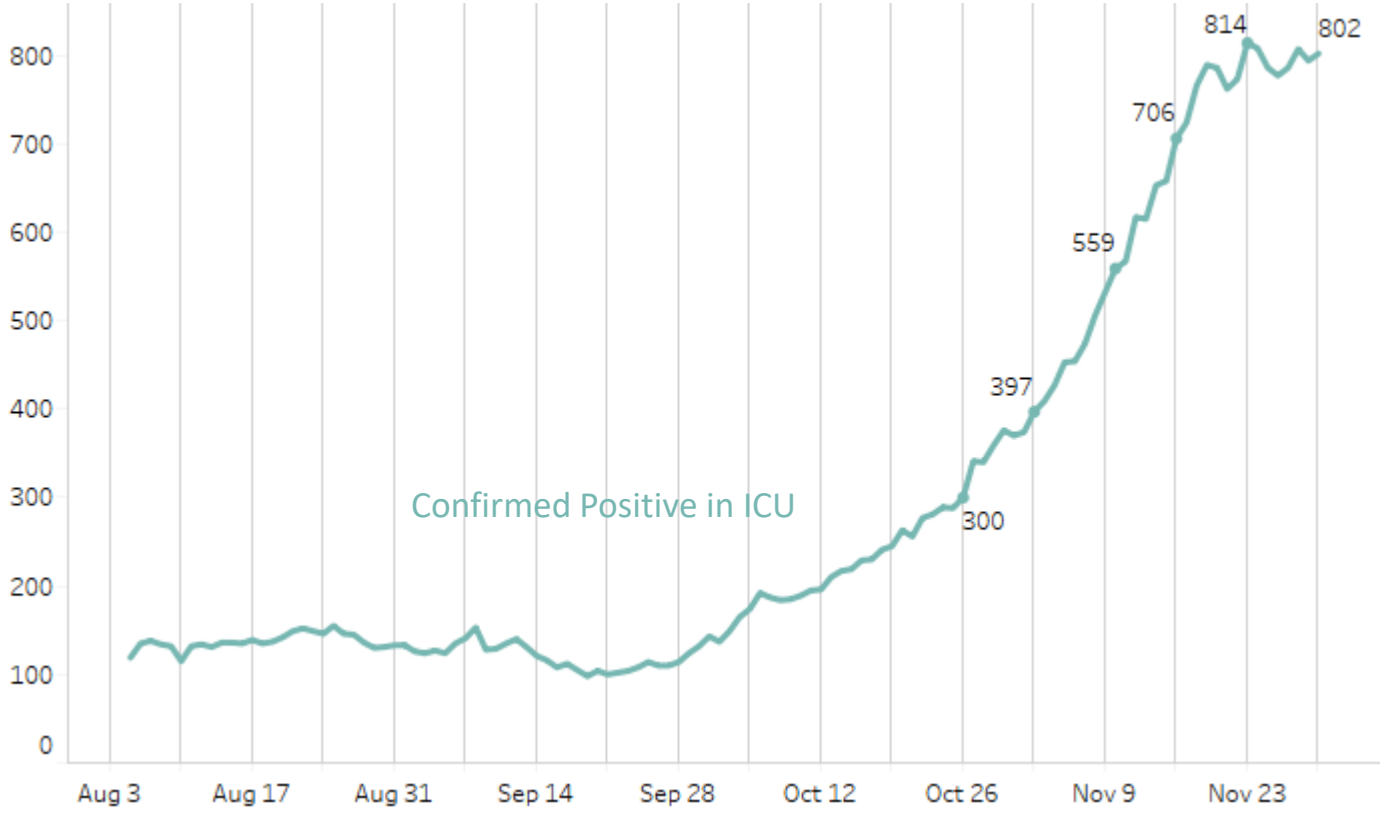
Trend has now shown 2 weeks of slowing growth rates

Hospitalized COVID Positive Long Term Trend (beginning March)



Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 8/1/2020 – 11/30/2020
Confirmed Positive in ICUs



COVID+ census in ICUs has flattened over the past week in the state overall and Region 7 and 8 show notable declines

Statewide ~30% of Adult ICU beds are occupied with COVID+ patients

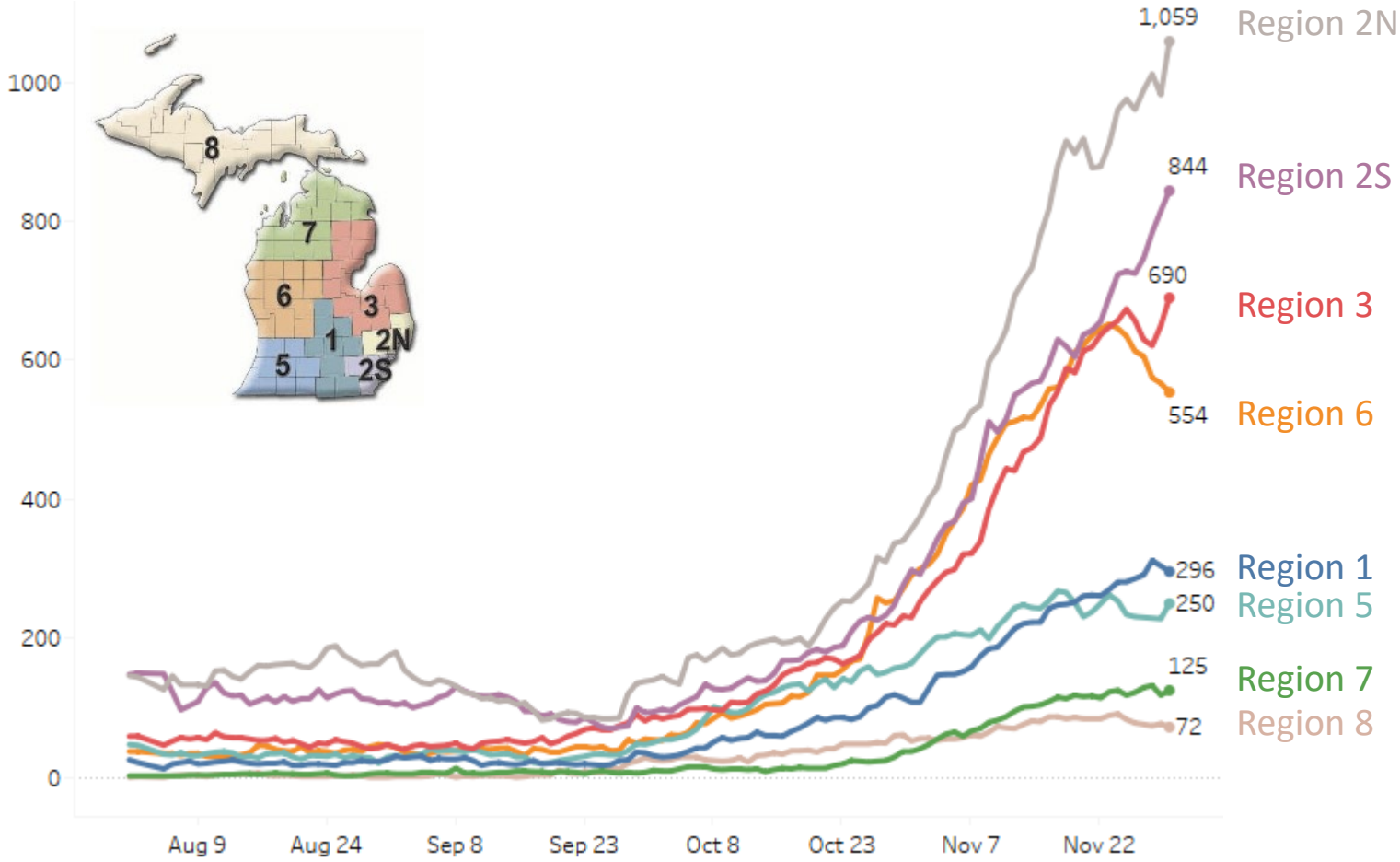
5/8 Regions remain >30% occupied with COVID+

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	80 (0%)	78%	40%
Region 2N	153 (+4%)	81%	29%
Region 2S	152 (-4%)	81%	20%
Region 3	157 (+1%)	93%	43%
Region 5	46 (+2%)	77%	29%
Region 6	130 (+2%)	80%	42%
Region 7	63 (-17%)	74%	35%
Region 8	21 (-29%)	81%	36%

Hospital bed capacity updated as of 11/27

Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 8/1/2020 – 11/30/2020
Confirmed Positive by Region



Many regions show slower or even decreasing growth in hospitalizations. Regions 1, 2N, and 2S continue to show increasing hospitalizations.

Regions 2N and 3 show high rates of population-adjusted COVID+ hospitalizations.

Region	Growth from Last Week	COVID+ Hospitalizations / MM
Region 1	11%	274/M
Region 2N	17%	478/M
Region 2S	22%	379/M
Region 3	6%	609/M
Region 5	-5%	263/M
Region 6	-15%	378/M
Region 7	2%	250/M
Region 8	-20%	231/M

How is public health capacity?

Case investigation and contact tracing is remaining steady although numbers are low given influx of new cases

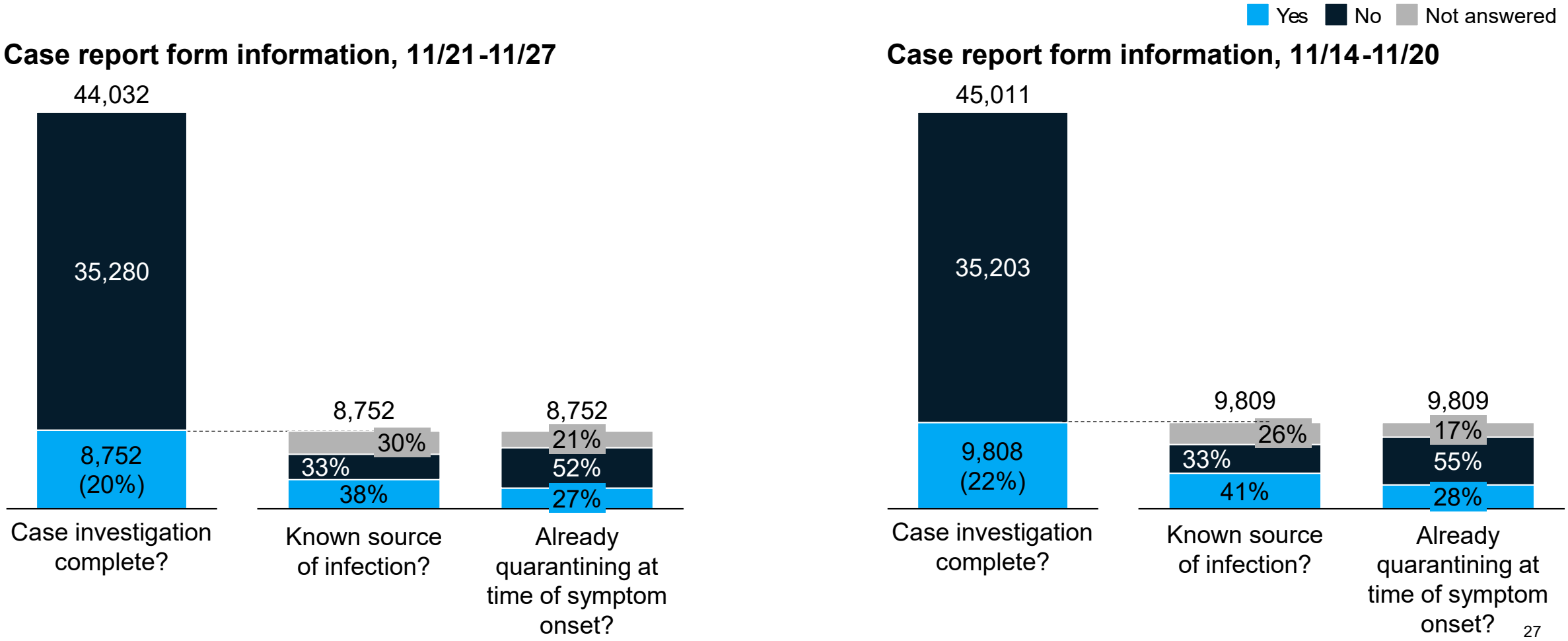
Many jurisdictions prioritizing case investigation

Implications of strained resources mean that fewer cases will have a known source of infection and linked to an outbreak

New Case Investigation Metrics

New Communicable Disease metrics slightly decreased since last week:

- 38% of investigated cases having a known source (41% last week, 44% week prior)
- 27% of investigated cases noting that they were quarantining before symptoms (28% last week)



Source: MDHHS – Michigan Disease Surveillance System