MI COVID RESPONSE DATA AND MODELING UPDATE

NOTE: All data as of Dec. 26 unless otherwise noted

December 29, 2020

Executive summary

Michigan has recorded the **19th highest number of cases (↓4)** , **7th highest number of deaths (↓2)**, **46th highest case rate (↓3)**, and **T13th highest death rate (↓7)** in the last 7 days (source: CDC COVID Data Tracker)

Michigan has the **25th highest hospitalization rate as a percent of total beds (↓1)**, and **9th highest number of COVID patients in the ICU (↔)** (source: Becker's Hospital Review)

Case rates (302.0, ↓103.7) and **percent positivity** (9.0%, ↓1.0%) are decreasing

More than 14.2% of available inpatient beds are filled with COVID patients (↓2.3) and state trends for COVID hospitalizations are decreasing

There were **753 deaths** (↓165) during the week of Dec 13-Dec 19 and the state death rate is **10.8 deaths/million/day** (↓2.4), but these are lagging indicators of cases and hospitalizations from several weeks ago

Daily diagnostic tests dropped to an average of 42.4K per day (↓6.2K) over the last week and the state rate is **4,264.7 tests/million/day** (↓517.1)

Comparison across states: Summary 12/28

What we see today:

- 8 states seeing increasing 2 week case trends (down vs. 19 last week)

- 48 states (stable) with significant outbreaks (high/increasing cases, increasing/high positivity increasing/high hospitalizations over 2 weeks (>100 per M))

- Nevada, Pennsylvania, Arizona, Alabama, Delaware have highest per capita <u>hospitalized</u> patient numbers

- Most rapid 2 week <u>case</u> growth: CA, TN, GA, HI, ME

- Midwest:
  - Wisconsin showing continued decline in hospitalizations (190/M), declining cases (377/M)
  - Indiana with slow drop in hospitalizations (405/M), and cases (725/M)
  - Illinois showing continued slow decline in hospitalizations (335/M), cases down (448/M)
  - Ohio with slow decline in hospitalizations (385/M) and cases (615/M)
  - Michigan showing continued decline in hospitalizations (255/M) and cases (290/M)

COVID-19 Spread

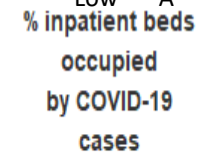Positivity has dropped to 9.0%

- Six MERC regions below 10%

Cases continue to decrease for 36 days
- Decreases are seen among most age groups, races, and ethnicities
- Fewer cases have race and ethnicity documented
- Number of active outbreaks is down 10% from previous week
- Number of reported school outbreaks decreased again since last week (142 to 119)

Confirmed and probable case indicators

Table Date: 12/26/2020, 7 days from date table was produced: 12/19/2020

Risk levels

| | Low | A | B | C | D | E |

% inpatient beds occupied by COVID-19 cases

	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	277.9	decline [32 days]	9.0	Decrease - 3wk	4331.3	0.6	Decrease - 3wk	13.9	8.7	Increase - 13wk
Grand Rapids	2	6	E	333.1	decline [38 days]	9.3	Decrease - 3wk	3887.3	1.1	Decrease - 3wk	12.3	12.5	Decrease - 1wk
Kalamazoo	3	5	E	332.0	decline [38 days]	8.8	Decrease - 3wk	3665.5	0.8	Decrease - 3wk	15.5	11.5	Increase - 3wk
Saginaw	4	3	E	377.4	decline [37 days]	11.1	Decrease - 2wk	4422.2	0.5	Decrease - 2wk	18.5	20.5	Decrease - 1wk
Lansing	5	1	E	337.3	decline [37 days]	8.4	Decrease - 2wk	3963.5	0.4	Decrease - 1wk	21.6	11.5	Decrease - 1wk
Traverse City	6	7	E	230.0	decline [31 days]	8.2	Decrease - 2wk	3250.9	1.2	Increase - 1wk	9.2	10.7	Decrease - 1wk
Jackson	7	1	E	425.9	decline [32 days]	10.7	Decrease - 3wk	5224.9	0.5	Increase - 1wk	17.3	13.2	Increase - 2wk
Upper Peninsula	8	8	E	229.5	decline [41 days]	4.2	Decrease - 2wk	3843.7	0.7	Decrease - 5wk	9.8	14.1	Increase - 1wk
Michigan			E	302.0	decline [36 days]	9.0	Decrease - 3wk	4264.7	0.7	Decrease - 3wk	14.2	10.8	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% |

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Recent statewide trends

Statewide trends

Positivity, %

Legend: 7-day average — ▬ Daily values

Y-axis: 20.0%, 15.0%, 10.0%, 5.0%, 0.0%
X-axis: 9/12, 9/26, 10/10, 10/24, 11/7, 11/21, 12/5, 12/19
Current: 9.0%

Daily cases per million

Y-axis: 1000, 800, 600, 400, 200, 0
X-axis: 9/12, 9/26, 10/10, 10/24, 11/7, 11/21, 12/5, 12/19
Current: 302.0

Daily hospitalization rate, %

Y-axis: 20%, 15%, 10%, 5%, 0%
X-axis: 9/12, 9/26, 10/10, 10/24, 11/7, 11/21, 12/5, 12/19
Current: 14.2%

Source: https://mistartmap.info/
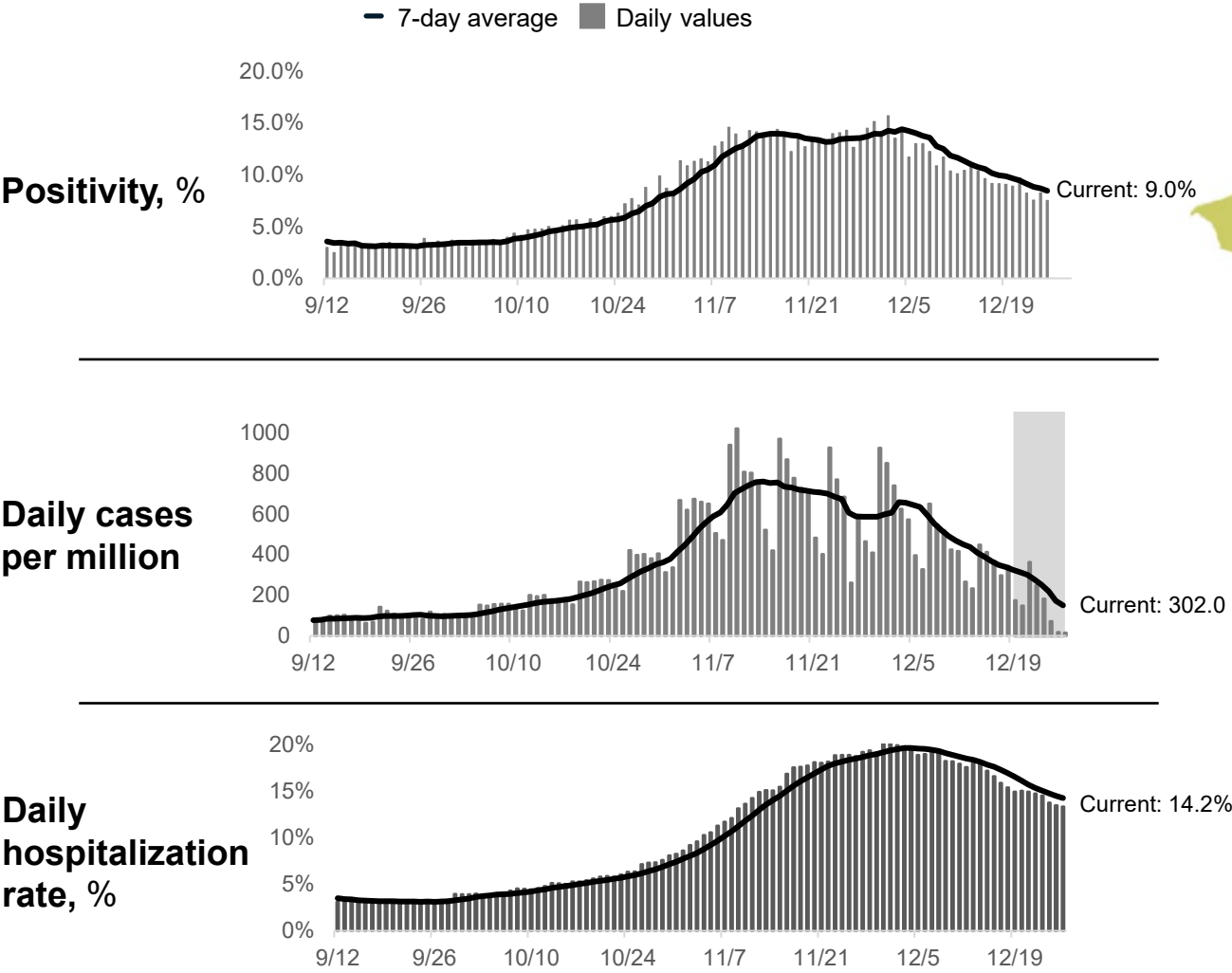
Regional breakdown: Cases, hospitalization rate, and positivity

Positivity: 7-day average positivity, %
Cases: 7-day average cases per million
Hosp. rate: 7-day average hospitalization rate, %

Region 8:
Positivity: 4.2%
Cases: 229.5
Hosp. rate: 9.8%

Region 6:
Positivity: 8.2%
Cases: 230.0
Hosp. rate: 9.2%

Region 2:
Positivity: 9.3%
Cases: 333.1
Hosp. rate: 12.3%

Region 4:
Positivity: 11.1%
Cases: 377.4
Hosp. rate: 18.5%

Region 5:
Positivity: 8.4%
Cases: 337.3
Hosp. rate: 21.6%

Region 1:
Positivity: 9.0%
Cases: 277.9
Hosp. rate: 13.9%

Region 3:
Positivity: 8.8%
Cases: 332.0
Hosp. rate: 15.5%

Region 7:
Positivity: 10.7%
Cases: 425.9
Hosp. rate: 17.3%

Positivity by county, 12/16-12/22

Last week, 12/09-12/15

Average positivity per day | **# of counties**

Average positivity per day	This week	Last week
<3%	5	1
3-7%	20	12
7-10%	38	21
10-15%	17	44
15-20%	2	4
>=20%	1	1

Updates since last week:

20 of 83 counties saw double digit positivity in the last week (16 county reduction)

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

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

Number of cases

7 day rolling average

The number of weekly reported cases to public health continues to decline

In the last week, 17,437 cases reported

3,443

3,414

2,447

1,619

COVID-19 cases by onset date: State of Michigan

Cumulative confirmed and probable cases, by date of onset of symptoms
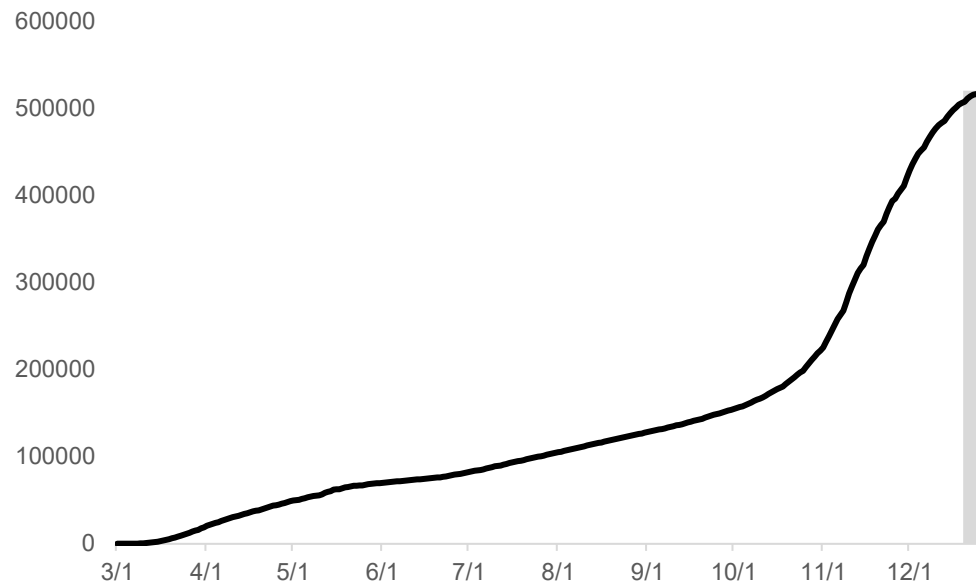
New confirmed and probable cases, by date of onset of symptoms
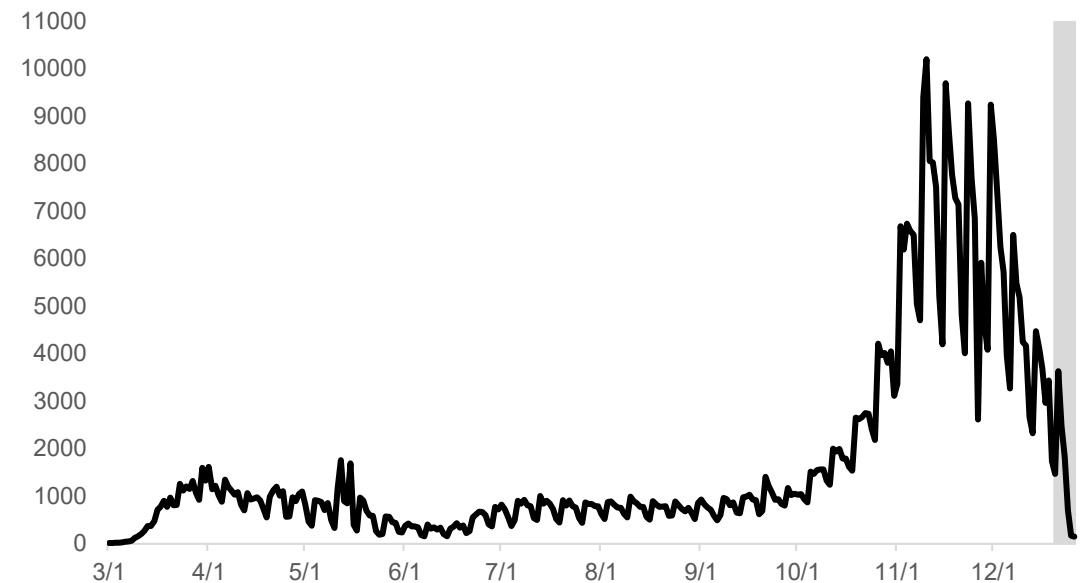
Updates since last week:

Cases have dropped for the fifth week in a row

Current daily case rate remains more than 3x the rate from early October, down from 5x times two weeks ago

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

Age group: average new daily cases

Daily new confirmed and probable cases per million by age group (7-day rolling average)
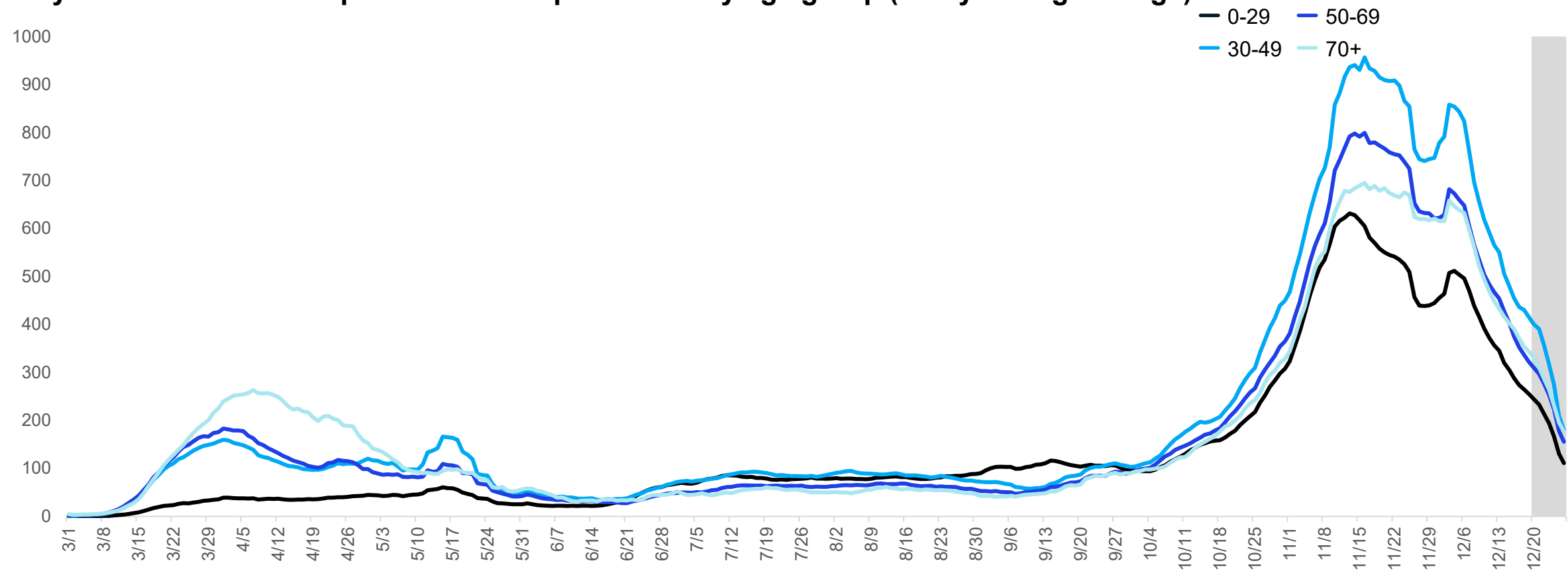
30-49 age group continues to have the highest cases per million, though cases per million have decreased for all age groups over the past 7 weeks

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

Average daily new cases per million people by race

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

32% of all cases represent unknown, multiple, or other races

Legend:
- American Indian/Alaska Native
- Asian/Pacific Islander
- Black/African American
- White

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

Average daily new cases per million people by ethnicity
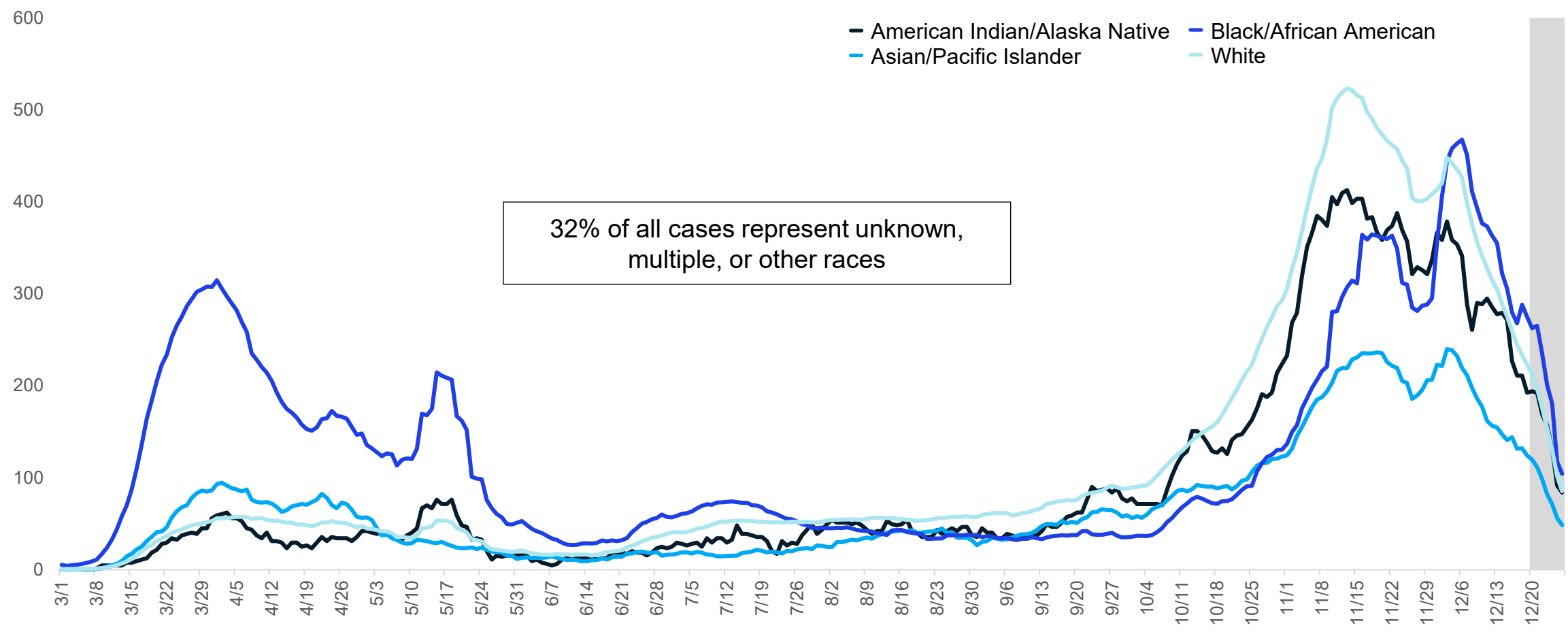
Daily new confirmed and probable cases per million (7 day rolling average) by ethnicity category
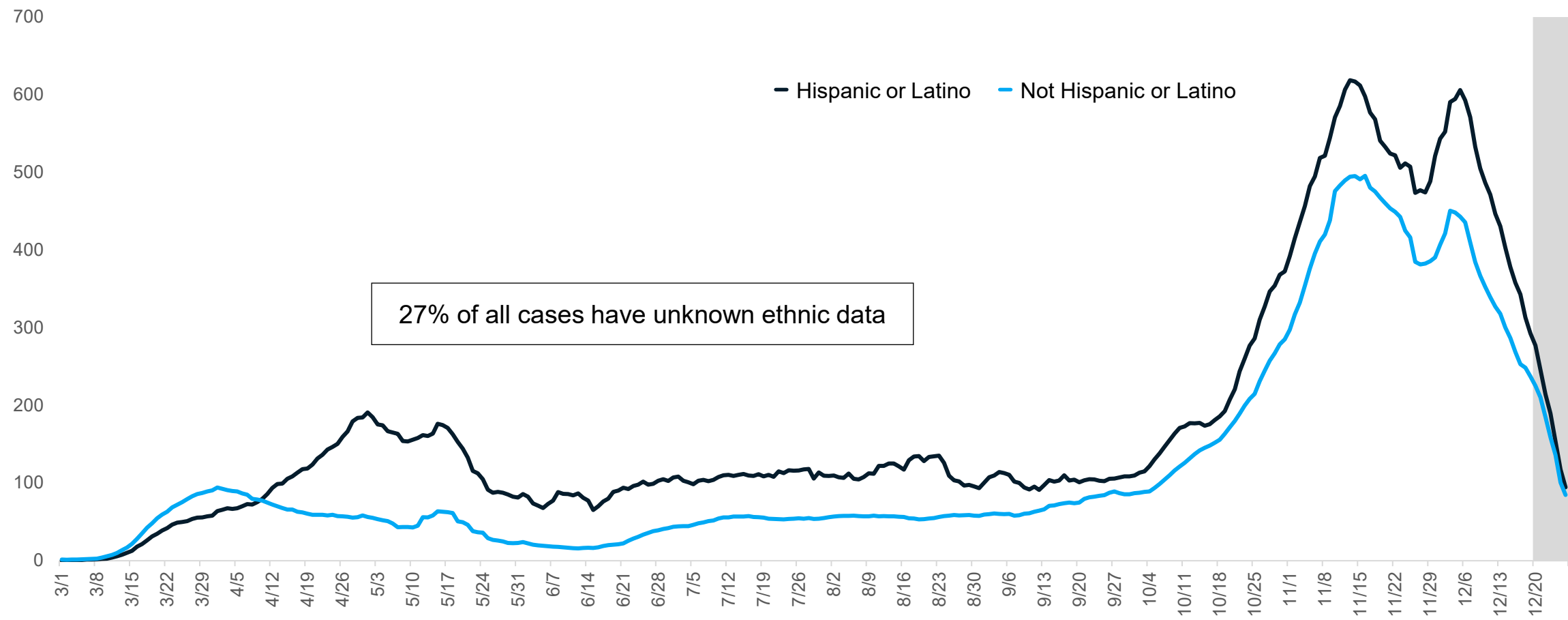
27% of all cases have unknown ethnic data

Legend: Hispanic or Latino — Not Hispanic or Latino

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 Dec 23

● Easier to identify outbreak
● Harder to identify outbreak

Site type	Outbreaks by ongoing/new classification, #			Visibility[1]
	Ongoing	New	Total	
SNF/LTC/OTHER ASSISTED LIVING	483	53	536	●
MANUFACTURING, CONSTRUCTION	121	11	132	●
K-12 SCHOOL	112	7	119	●
*RETAIL	62	14	76	●
HEALTHCARE	63	7	70	●
OFFICE SETTING	37	11	48	●
CHILDCARE/YOUTH PROGRAM	27	5	32	●
OTHER	26	2	28	●
CORRECTIONS	26	0	26	●
COLLEGE/UNIVERSITY	25	0	25	●
AGRICULTURAL/FOOD PROCESSING	19	3	22	●
*SOCIAL GATHERING	13	2	15	●
*RESTAURANTS AND BARS	13	0	13	●
*RELIGIOUS SERVICES	5	4	9	●
*SHELTERS	6	0	6	●
*PERSONAL SERVICES	1	0	1	●
*COMMUNITY EXPOSURE - INDOOR	1	0	1	●
*COMMUNITY EXPOSURE - OUTDOOR	0	0	0	●
TOTAL	1040	119	1159	

Total number of active outbreaks is down 10% from previous week

Following LTCs and retail, the greatest number of new outbreaks were reported in office setting (11), manufacturing/ construction (11), K-12 schools (7), and healthcare (7) and childcare (5).

There have been no new outbreaks reported by LHD in restaurants or bars

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

K-12 school outbreaks, recent and ongoing, week ending Dec 23

Number of reported outbreaks decreased since last week (142 to 119) including reductions in High School (48 to 40), Middle/Jr High (26 to 19), And Pre K-Elementary (57 to 49), with the number of Administrative outbreaks holding steady at 11

Region	Number of reported cases, # # Ongoing - Excluding New / # New	Number of outbreaks	Range of cases per outbreak
Region 1	59 / 13	13	2-8
Region 2n	43 / 16	16	2-9
Region 2s	23 / 8	8	2-6
Region 3	172 / 30	30	2-18
Region 5	13 / 5	5	2-3
Region 6	575 / 35	35	2-79
Region 7	33 / 8	8	1-8
Region 8	37 / 4	4	2-11
Total	955 / 119	**119**	**1-79**

Grade level	Number of reported cases, # # Ongoing - Excluding New / # New	Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	221 / 15	49	1-18
Jr. high/middle school	122 / 7	19	2-16
High school	576 / 4	40	2-79
Administrative	25 / 1	11	2-6
Total	955 / 27	**119**	**1-79**

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

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COVID-19 and Healthcare Capacity and COVID Severity

Hospitalizations and ICU utilization are decreasing

- Hospitalizations down 35% since December 1st peak
- ICU occupancy declined 7% over last week
- Only region 3 has >30% of Adult ICU beds with patients positive for COVID

Current deaths are a lagging indicator of cases, but the number of deaths is beginning to decline

Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 7/1/2020 – 12/28/2020
Confirmed Positive
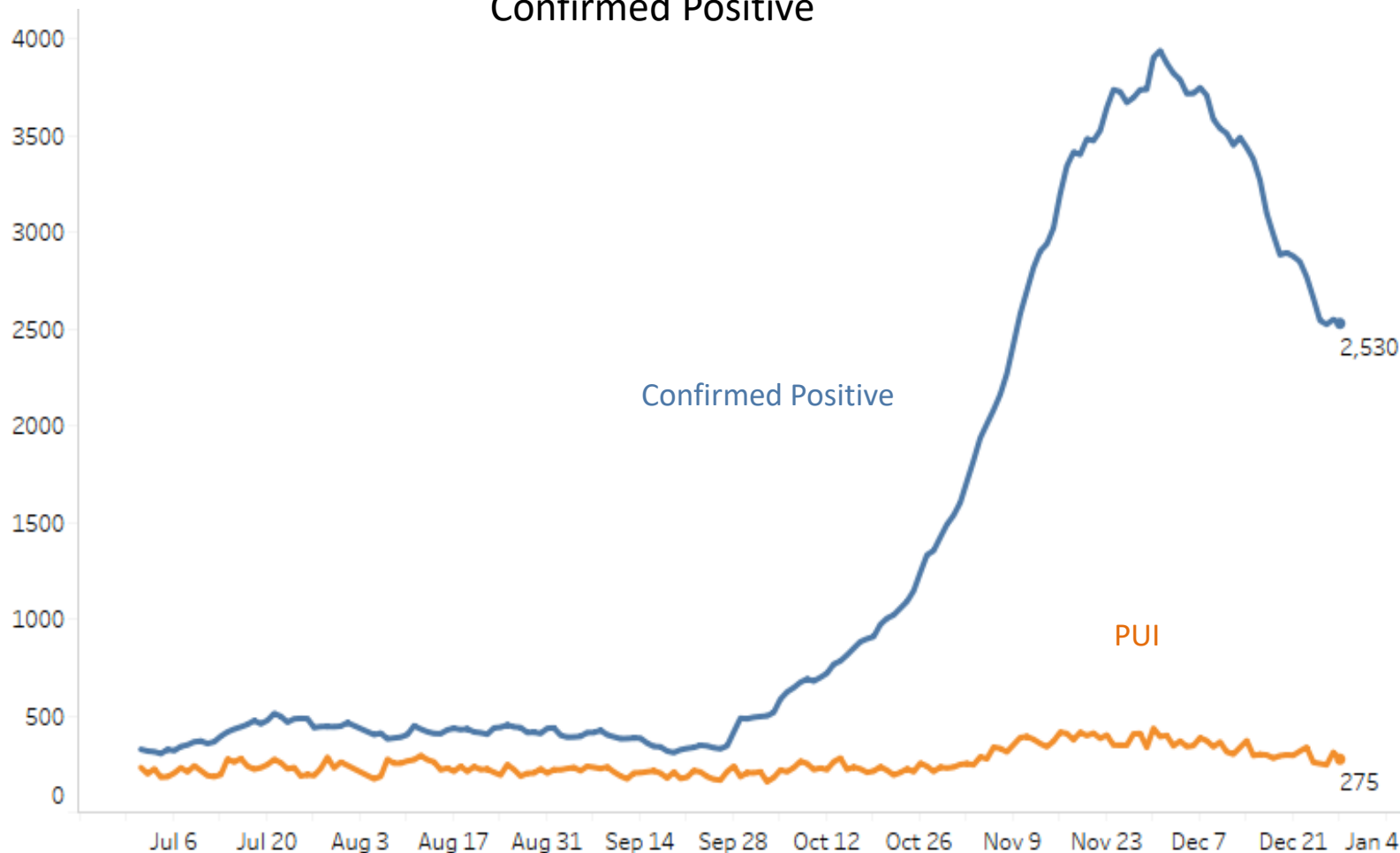
Hospital COVID+ census is down 12% from the previous week and down 35% from the December 1 peak.

New COVID admissions are also down week over week

Confirmed Positive

PUI

2,530

275

Hospitalized COVID Positive Long Term Trend (beginning March)

2,530
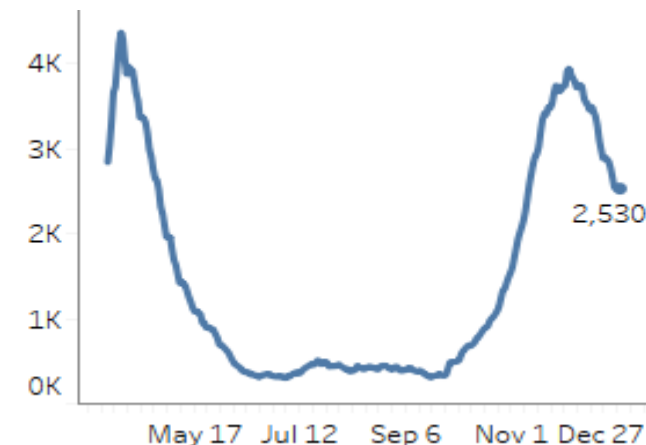
Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 8/1/2020 – 12/28/2020
Confirmed Positive by Region
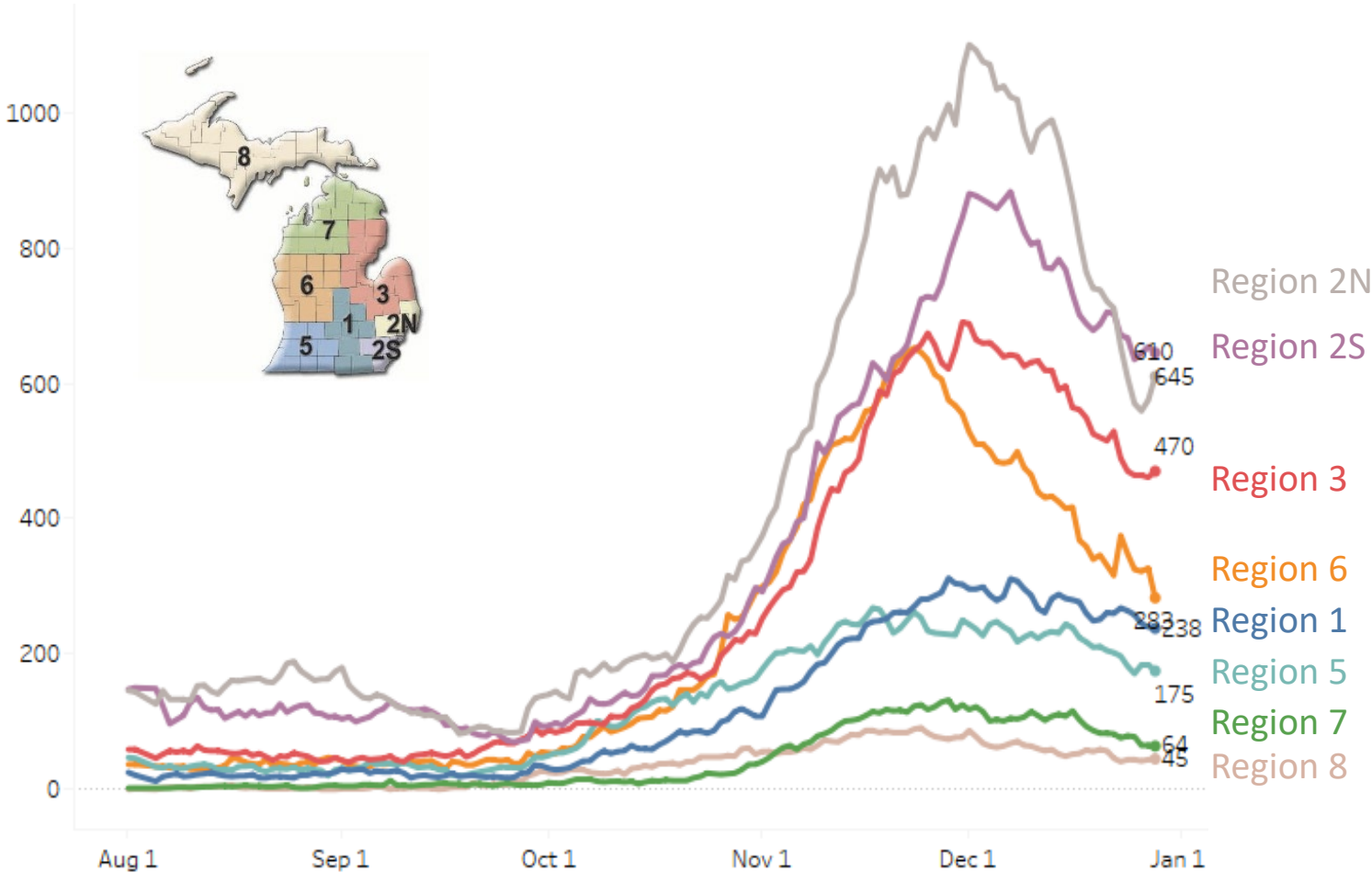
All regions are showing decreasing trends in COVID+ hospitalizations

Region 7 and 8 showed largest percent decreases

Region 3 continues to be most impacted on a population adjusted basis

Region	Trend from Last Week	COVID+ Hospitalizations / MM
Region 1	-9%	220/M
Region 2N	-13%	275/M
Region 2S	-12%	290/M
Region 3	-9%	415/M
Region 5	-15%	184/M
Region 6	-15%	193/M
Region 7	-23%	128/M
Region 8	-17%	145/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 8/1/2020 – 12/28/2020
Confirmed Positive in ICUs

Confirmed Positive in ICU
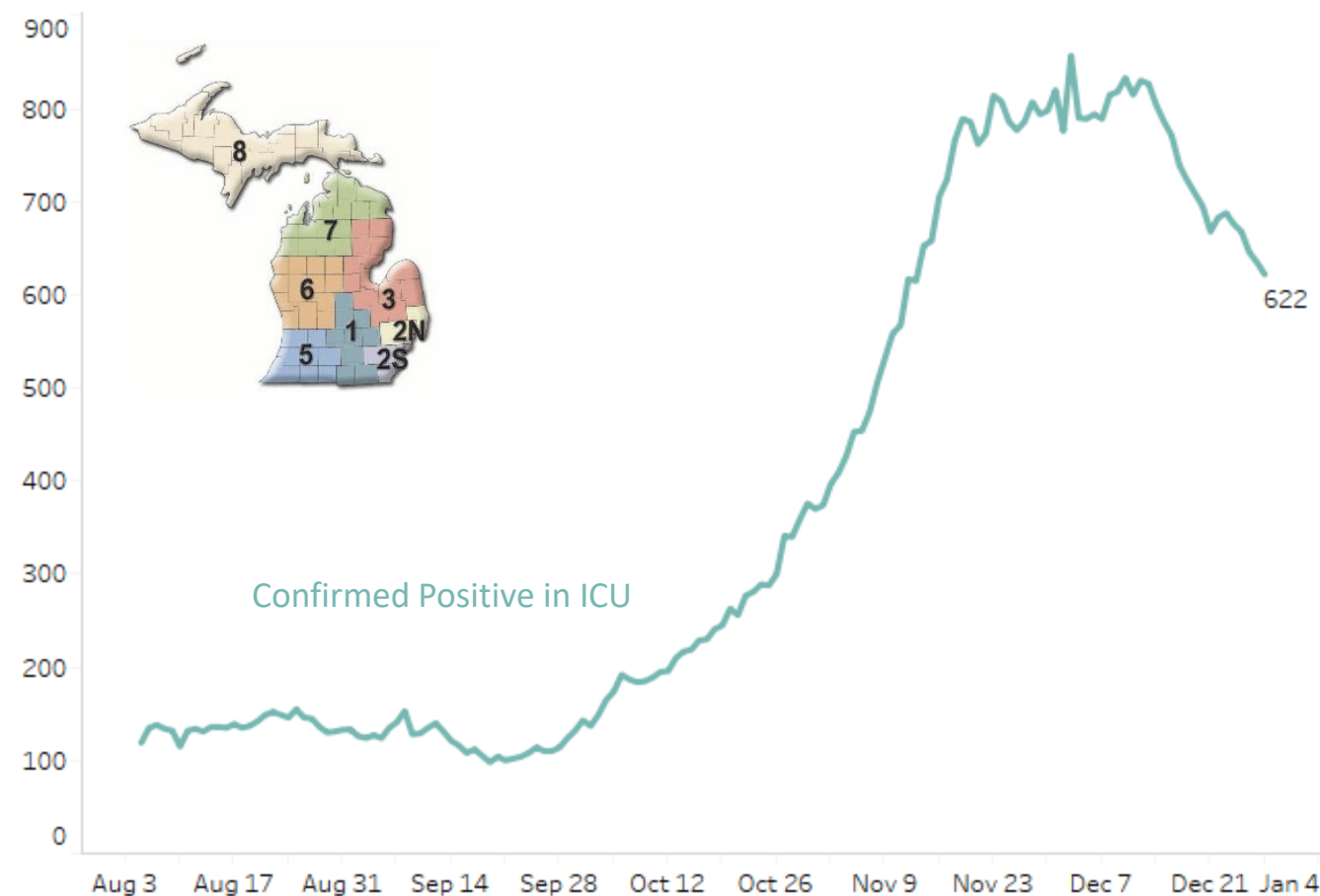
COVID+ ICU Census has declined by 7% over the past week, with all regions showing declining trend except Region 6.

Only Region 3 continues to have >30% of ICU beds occupied by COVID+ patients

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	56 (-7%)	84%	28%
Region 2N	118 (-13%)	79%	21%
Region 2S	171 (-6%)	86%	22%
Region 3	123 (-1%)	90%	33%
Region 5	34 (-13%)	86%	22%
Region 6	81 (+7%)	66%	22%
Region 7	27 (-33%)	72%	15%
Region 8	12 (0%)	65%	21%

Hospital bed capacity updated as of 12/23

COVID-19 deaths by date of death: State of Michigan

Cumulative confirmed and probable deaths, by date of onset of symptoms
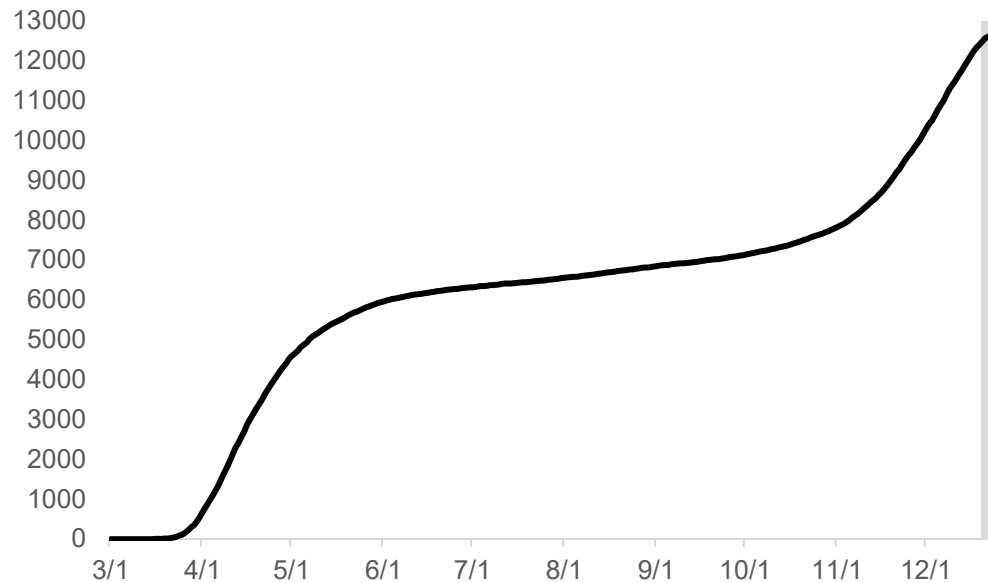
New confirmed and probable deaths, by date of onset of symptoms
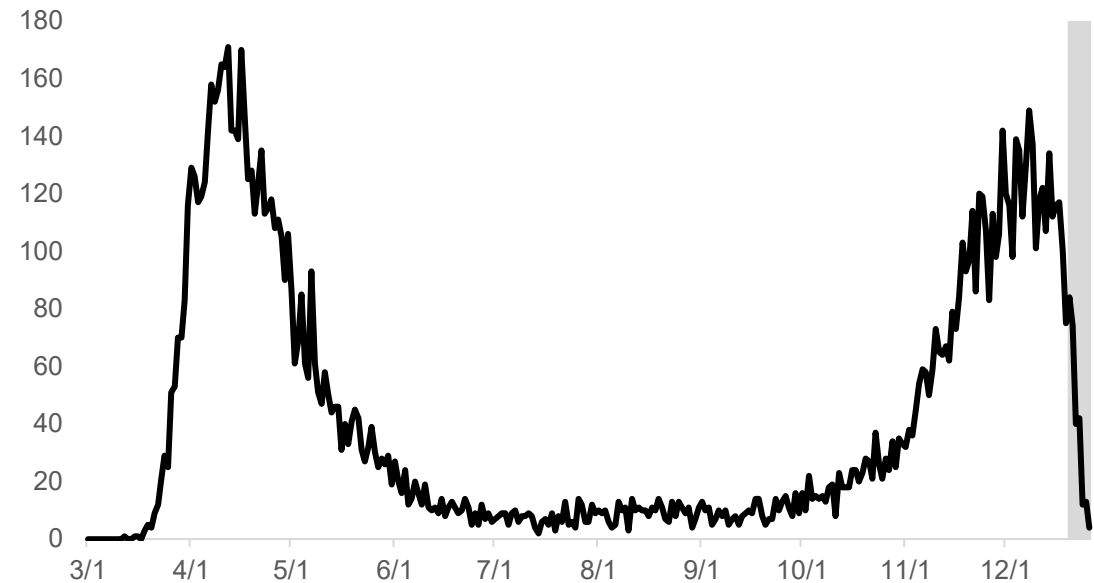
Updates since last week:

Although deaths are a lagging indicator of cases, the number of deaths has declined for one week

The current number of deaths is more than 8.5x the number 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

Average and total new deaths, by age group

Daily new confirmed and probable deaths per million by age group (7 day rolling average)
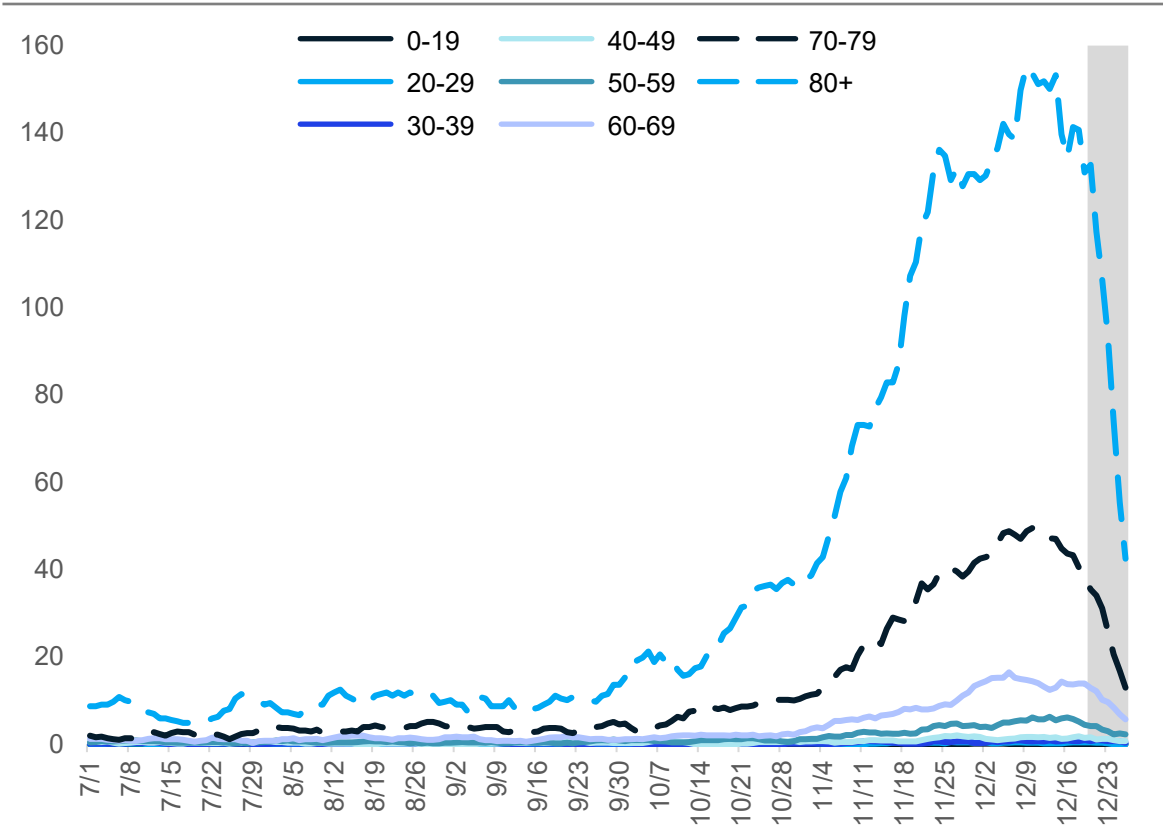
Total new confirmed and probable deaths by age group (past 30 days, ending 12/26)
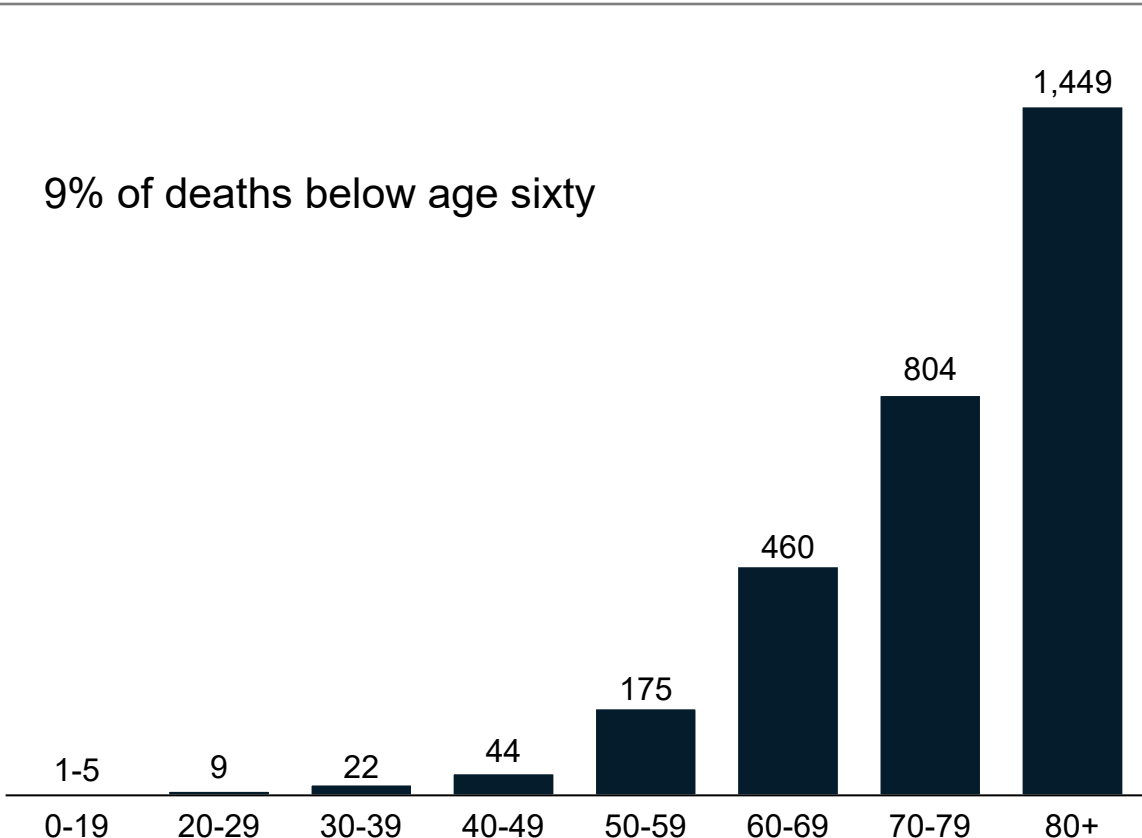
9% of deaths below age sixty

Average daily new deaths per million people by race

Daily new confirmed and probable deaths per million (7 day rolling average)
By race category
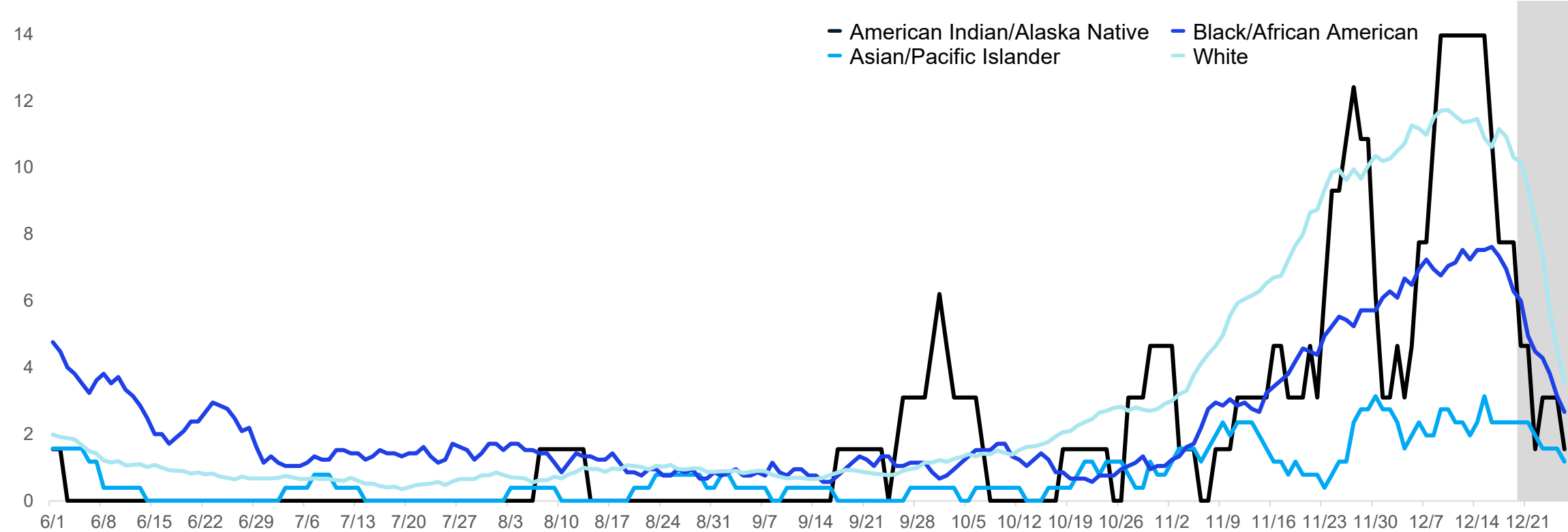
Note: Multiple Races, Other, and Unknown race/ethnicity are not included in calculations
Source: MDHHS – Michigan Disease Surveillance System

Average daily new deaths per million people by ethnicity

Daily new confirmed and probable deaths per million (7 day rolling average)
By ethnicity
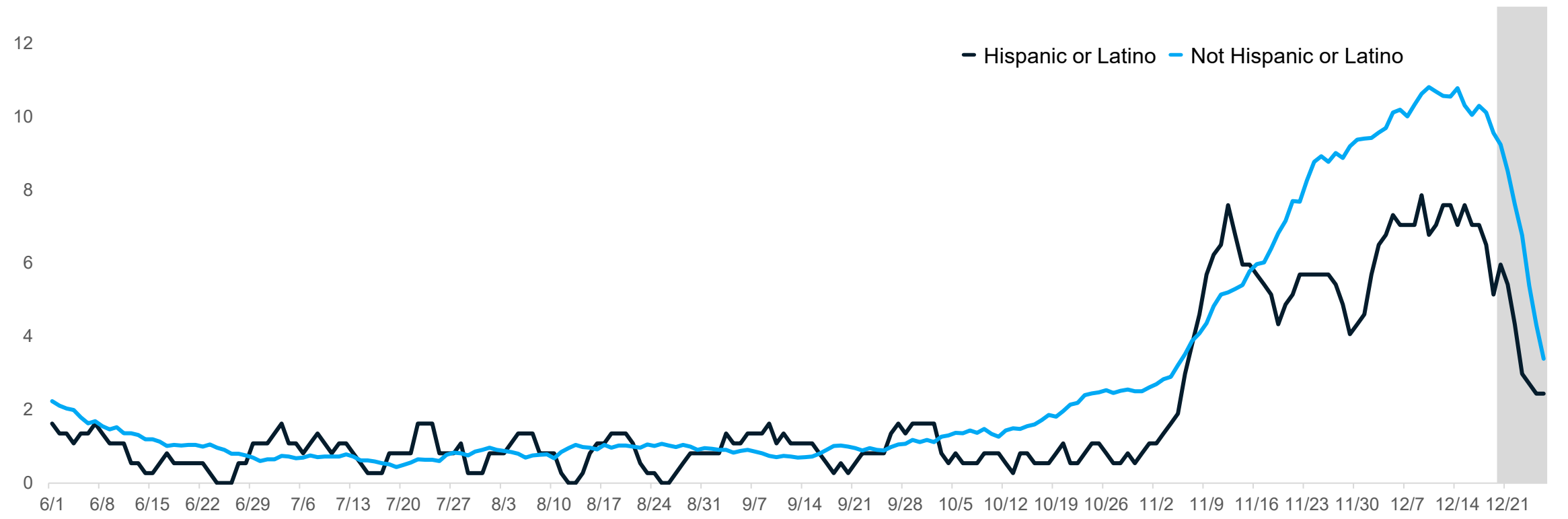
Note: Multiple Races, Other, and Unknown race/ethnicity are not included in calculations
Source: MDHHS – Michigan Disease Surveillance System

How is public health capacity?

Testing volume has declined to 45,255

- 16.0% are antigen tests
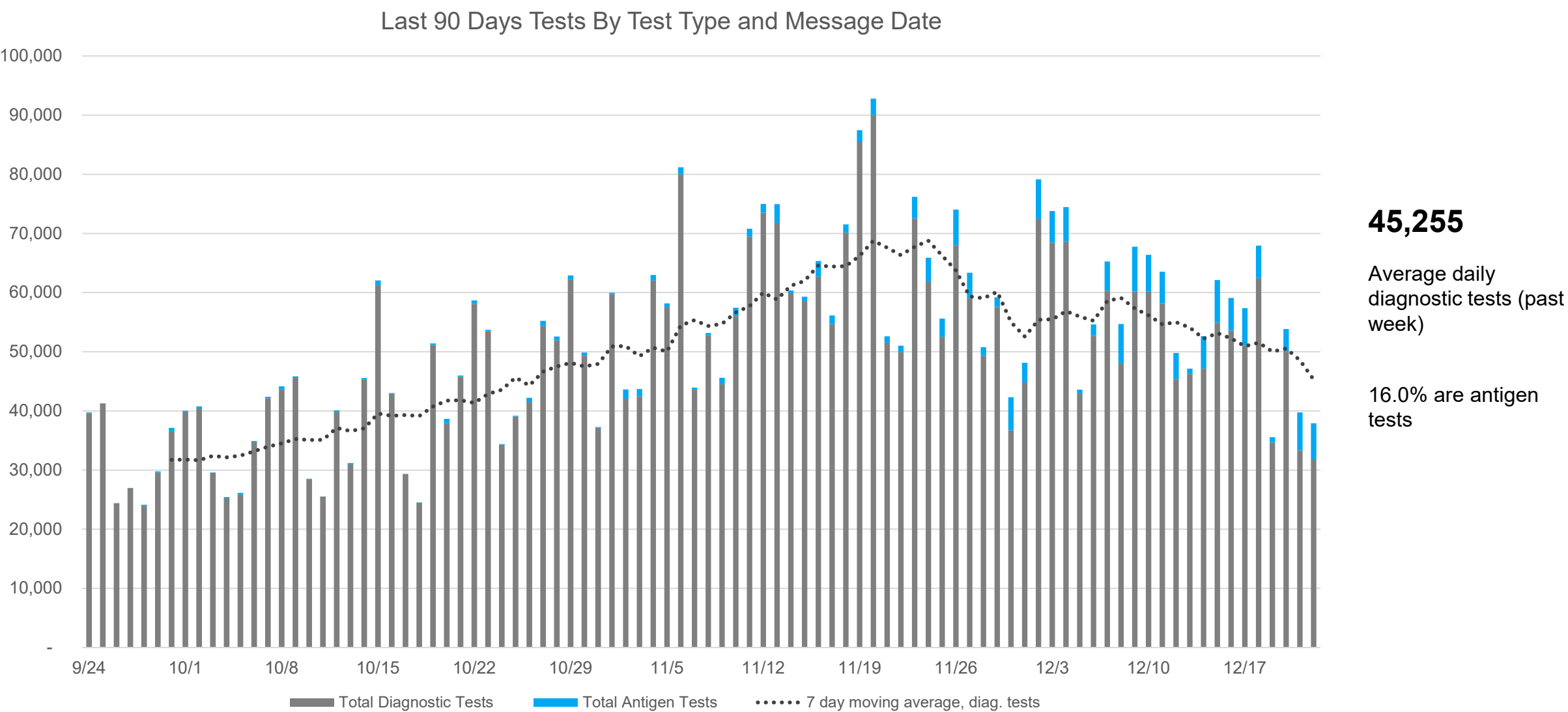- Testing by county ranges from 1,600 to 6,700 daily tests per million residents

Compared to other states, Michigan has decreased in testing and testing per capita since last week

- Positivity has improved compared with other states

A higher percentage of case investigations are being completed

- Primarily attributed due to a decrease in number of cases

Daily diagnostic tests, by message date

Last 90 Days Tests By Test Type and Message Date

45,255

Average daily diagnostic tests (past week)

16.0% are antigen tests

Legend: ▬ Total Diagnostic Tests ▬ Total Antigen Tests ••••• 7 day moving average, diag. tests

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

Daily Avg Tests per MM Last 7 Days - No MDOC   12/28/2020
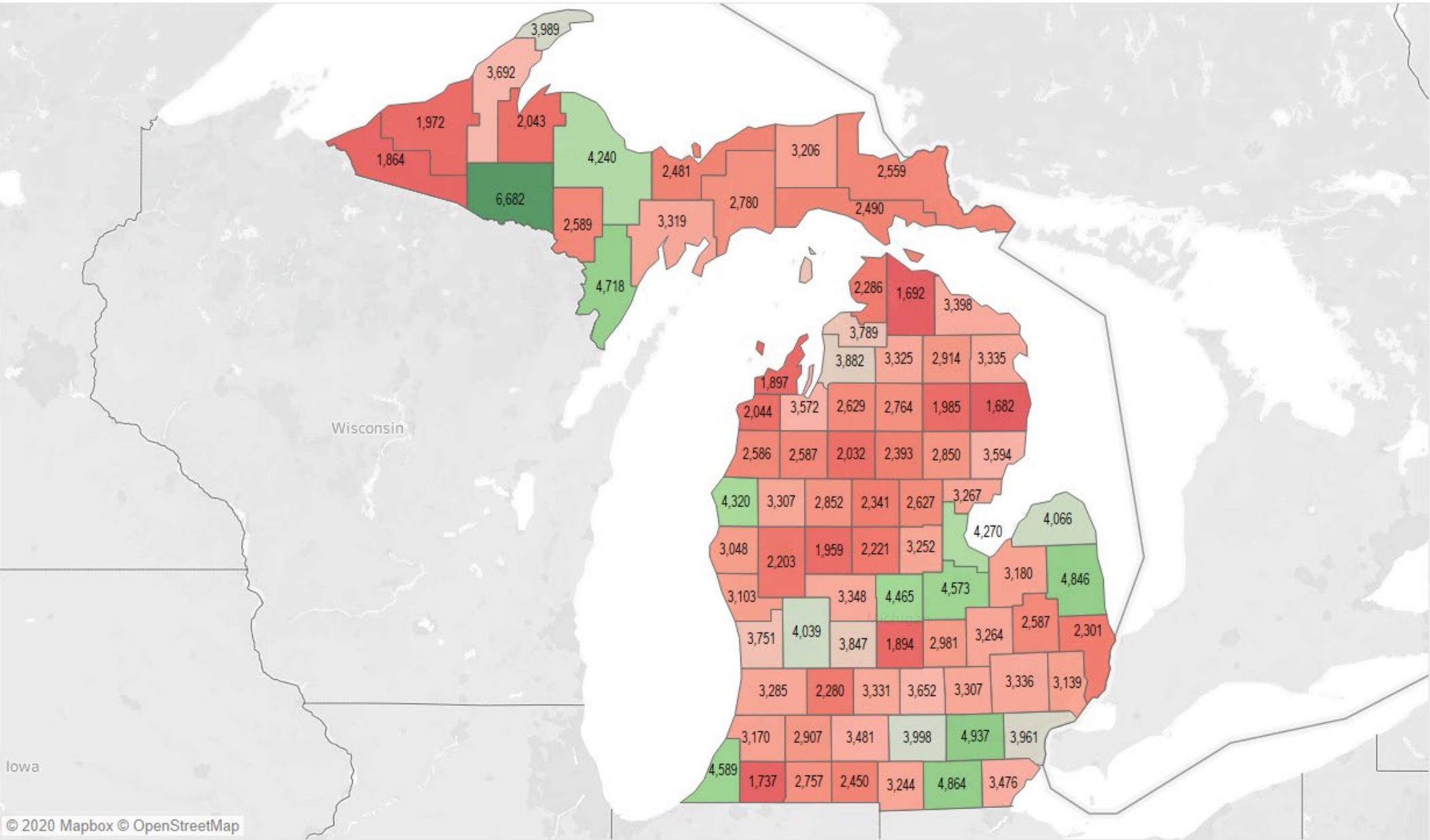
Average per MM, L..
1,682   7,500

Daily Tests per Million People

Green starts over 3900 tests per million people

Aids in targeting Resources, with positivity

© 2020 Mapbox © OpenStreetMap

Map based on Longitude (generated) and Latitude (generated). Color shows sum of Average per MM, Last Week. The marks are labeled by sum of Average per MM, Last Week. Details are shown for State and County. The view is filtered on Latitude (generated) and Longitude (generated). The Latitude (generated) filter keeps non-Null values only. The Longitude (generated) filter keeps non-Null values only.

Daily molecular tests

	State	Tests (K)
1	California	333.5
2	Illinois	83.3
3	North Carolina	58.1
4	New Jersey	52.1
5	Florida	46.2
6	**Michigan (↓1)**	**39.9**
7	Georgia	39.6
8	Connecticut	25.6
9	Louisiana	21.5
10	Massachusetts	20.3
11	Arizona	20.2
12	Kentucky	16.3
13	Maryland	14.7
14	New Mexico	14.4
15	Indiana	13.0
16	Arkansas	11.9
17	Minnesota	11.8
18	Colorado	11.5
19	Alabama	9.9
20	Mississippi	8.7
21	Alaska	7.4
22	Missouri	6.5
23	District of Columbia	6.2
24	Maine	6.1
25	Kansas	4.5
26	Montana	3.8
27	Nebraska	2.8
28	New Hampshire	2.6

Weekly % of pop. tested

	State	Weekly % tested
1	Alaska	7.1%
2	New York	7.1%
3	District of Columbia	6.2%
4	California	5.9%
5	Connecticut	5.0%
6	New Mexico	4.8%
7	Illinois	4.6%
8	Tennessee	4.2%
9	New Jersey	4.1%
10	West Virginia	4.0%
11	North Carolina	3.9%
12	Oklahoma	3.5%
13	Louisiana	3.2%
14	Maine	3.2%
15	South Carolina	3.1%
16	Virginia	2.9%
17	Oregon	2.9%
18	Texas	2.8%
19	**Michigan (↓6)**	**2.8%**
20	Arkansas	2.8%
21	Georgia	2.6%
22	Kentucky	2.5%
23	Ohio	2.5%
24	Montana	2.5%
25	Washington	2.2%
26	Rhode Island	2.1%
27	Massachusetts	2.1%
28	Mississippi	2.0%

Percent positive

	State	% Positive
1	District of Columbia	3.2%
2	Alaska	3.4%
3	Oregon	5.4%
4	New York	5.5%
5	Connecticut	5.6%
6	Maine	6.6%
7	Illinois	6.8%
8	Vermont	7.0%
9	**Michigan (↑9)**	**7.2%**
10	Washington	7.5%
11	New Mexico	8.2%
12	New Jersey	8.6%
13	Louisiana	9.4%
14	North Carolina	10.2%
15	Texas	10.7%
16	Montana	10.7%
17	Virginia	10.8%
18	California	11.3%
19	South Carolina	11.5%
20	West Virginia	12.6%
21	Georgia	13.1%
22	Kentucky	13.2%
23	Minnesota	14.4%
24	Oklahoma	15.0%
25	Maryland	16.2%
26	Arkansas	16.7%
27	Ohio	17.1%
28	Tennessee	20.1%

Michigan average uses most recent MAG data and includes all tests, including MDOC and "Region Unknown"
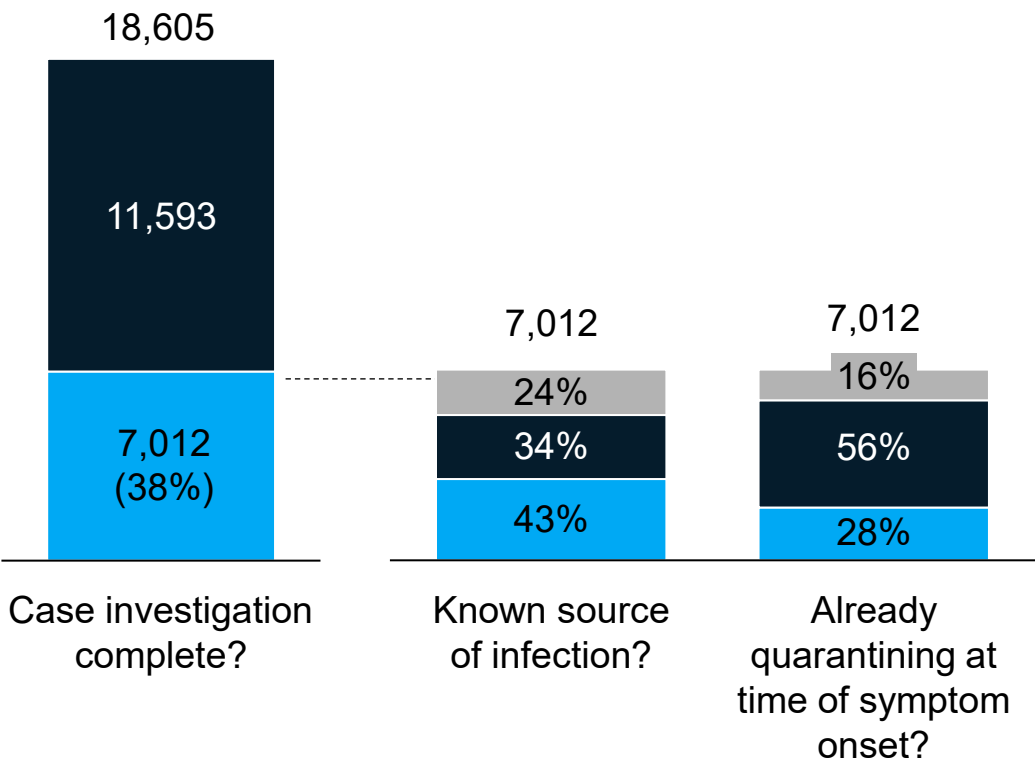SOURCE: Numerical Data – MDSS, COVID Tracking Project, U.S. Census Bureau.

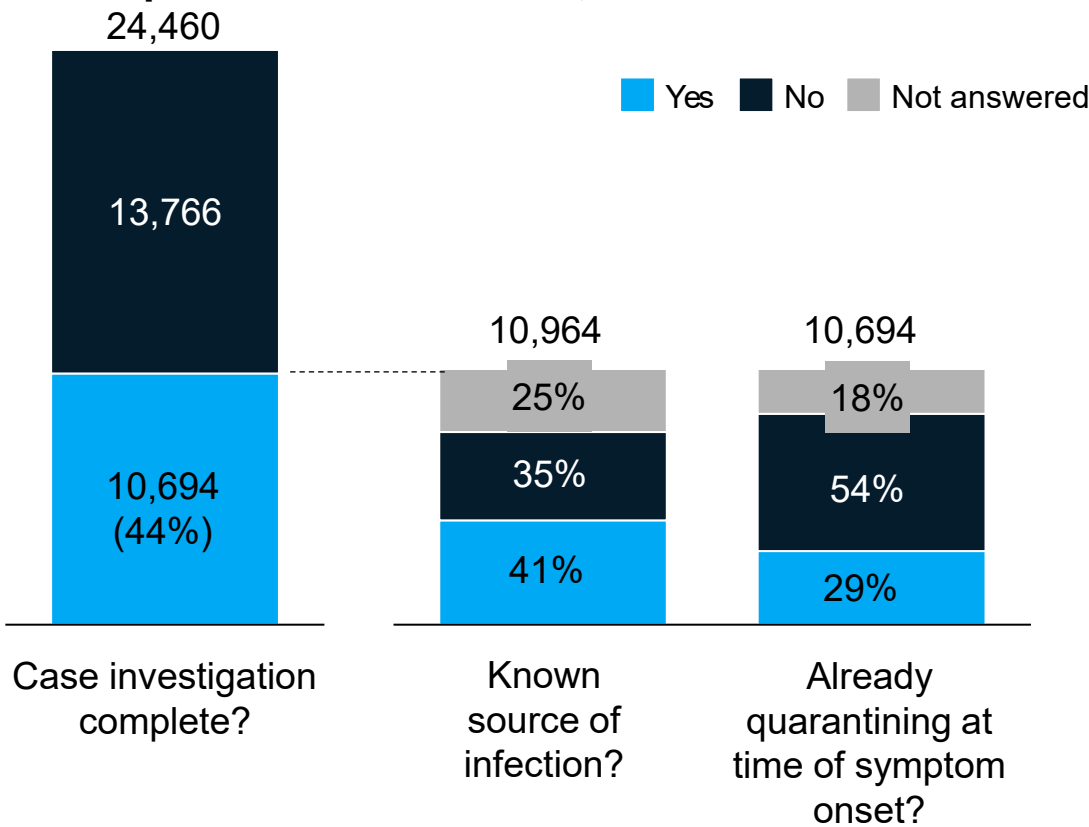# New Case Investigation Metrics

New Communicable Disease metrics slightly increased since last week:
- 43% of investigated cases having a known source (41% last week, 42% week prior)
- 28% of investigated cases noting that they were quarantining before symptoms (29% last week)
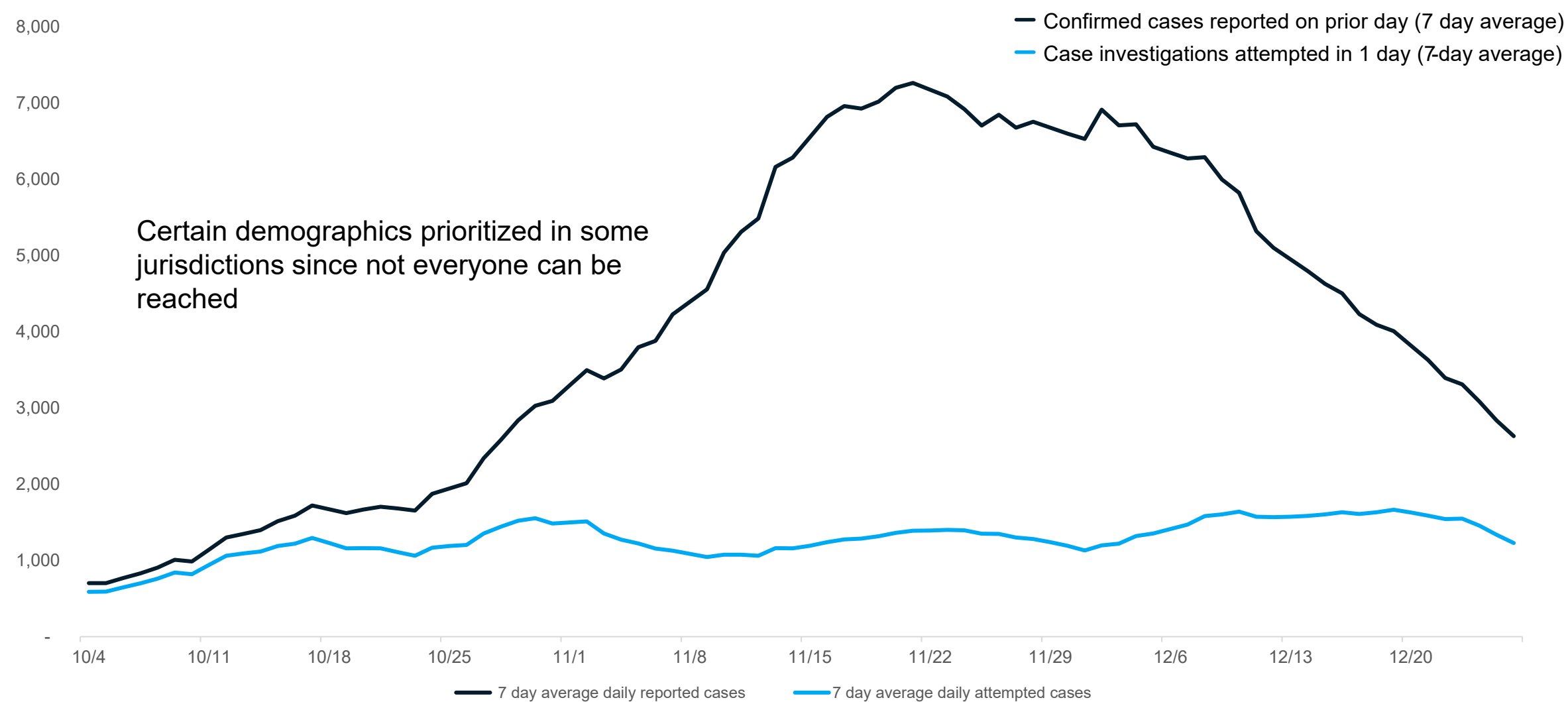
Case report form information, 12/19-12/25

Case report form information, 12/12-12/18

Legend: ■ Yes (light blue) ■ No (dark navy) ■ Not answered (gray)

Chart 1 (12/19-12/25):
- Case investigation complete? Total 18,605; No 11,593; Yes 7,012 (38%)
- Known source of infection? Total 7,012; Not answered 24%; No 34%; Yes 43%
- Already quarantining at time of symptom onset? Total 7,012; Not answered 16%; No 56%; Yes 28%

Chart 2 (12/12-12/18):
- Case investigation complete? Total 24,460; No 13,766; Yes 10,694 (44%)
- Known source of infection? Total 10,964; Not answered 25%; No 35%; Yes 41%
- Already quarantining at time of symptom onset? Total 10,694; Not answered 18%; No 54%; Yes 29%

Cases vs. Attempted Case Investigations

Certain demographics prioritized in some jurisdictions since not everyone can be reached

Confirmed cases reported on prior day (7 day average)
Case investigations attempted in 1 day (7-day average)

7 day average daily reported cases
7 day average daily attempted cases

Note: Cases visualized by report date; Absolute number of case investigations estimated from daily case investigation success rate
Source: MDHHS – Michigan Disease Surveillance System

Science Round Up

Mobility data show that Michiganders continue staying home

How many people are staying at home in Michigan?
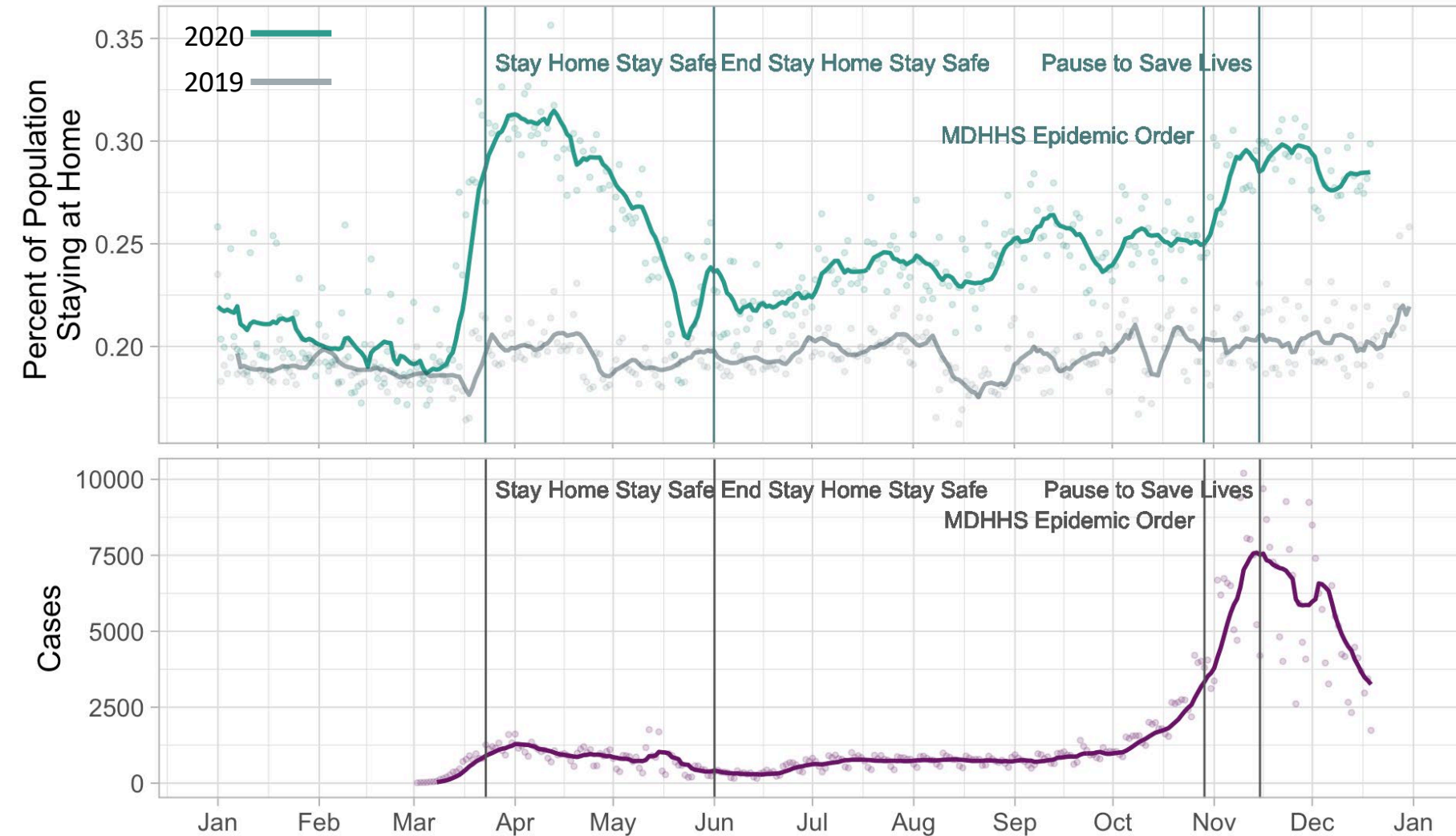
- Stay-at-home levels increased in November
- Overall increase compared to 2019
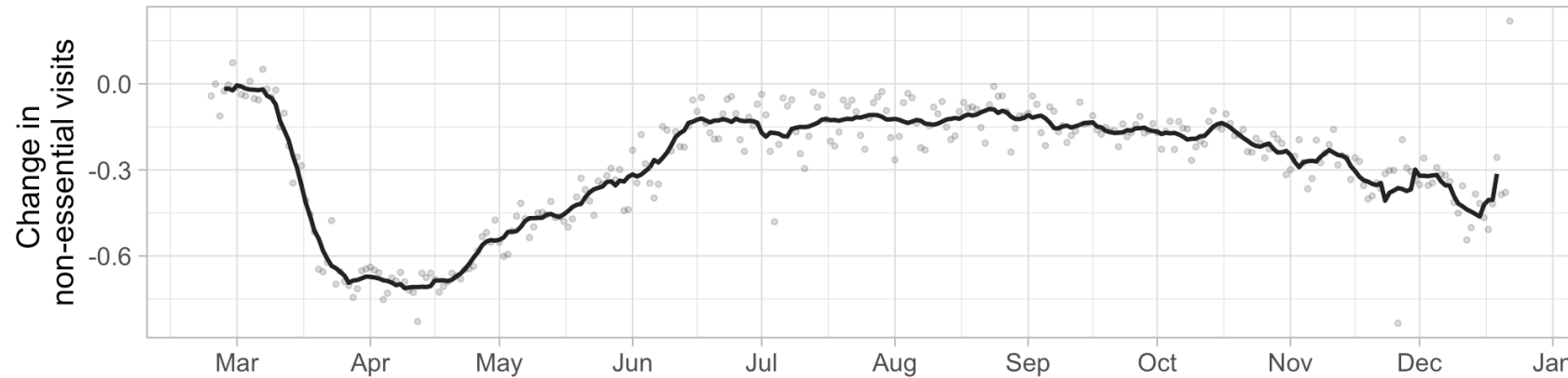- Stay-home levels stable (most recent data is 12/19)

Unacast mobility patterns show declines for MI

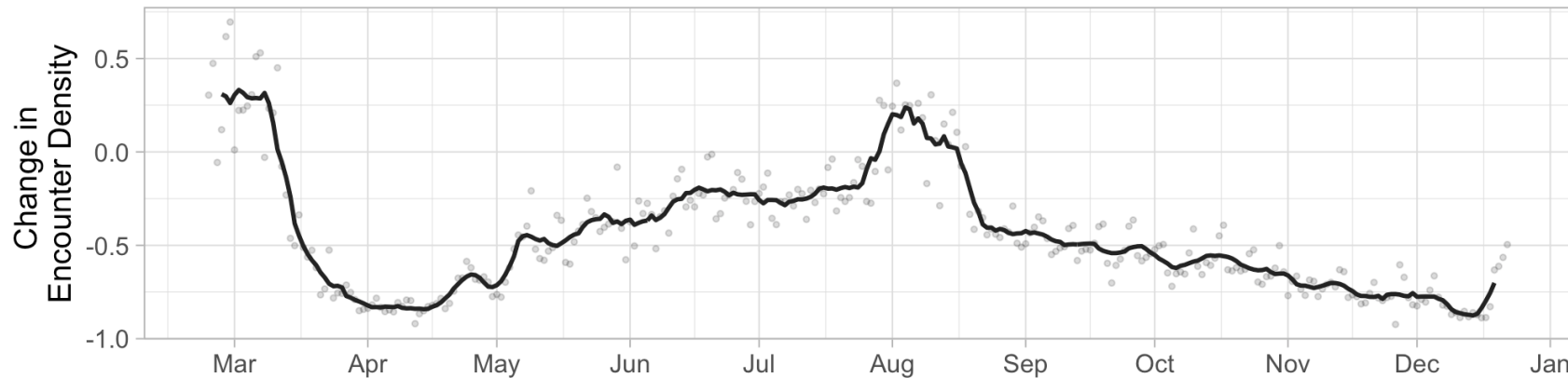Decline has continued, although with a small uptick in the most recent data (data through 12/26)

unacast social distancing scoreboard
https://www.unacast.com/covid19/social-distancing-scoreboard

Change in average mobility
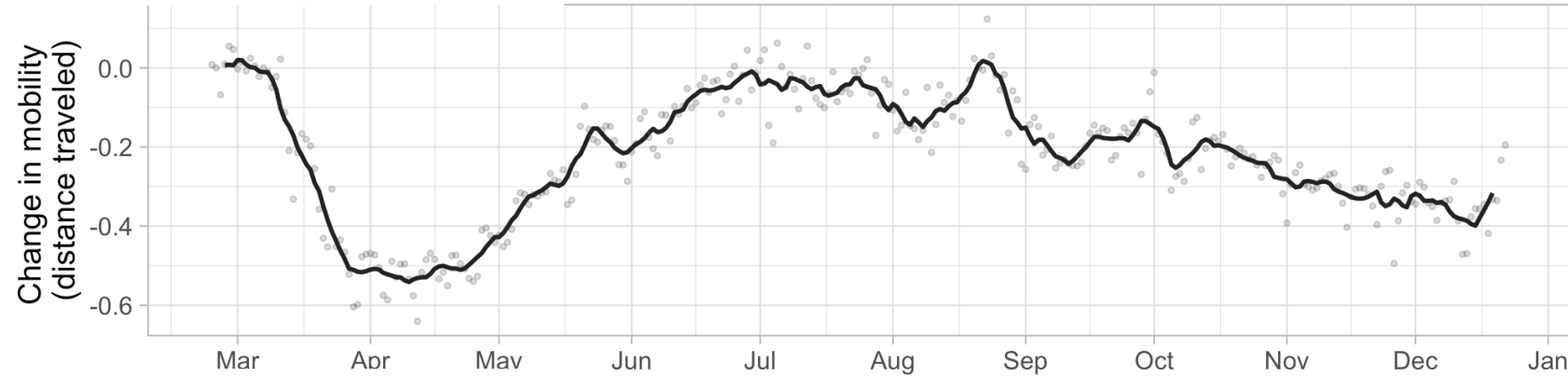
Change in non-essential visits

Difference in encounter density