MI COVID RESPONSE DATA AND MODELING UPDATE

NOTE: All data as of Jan. 16 unless otherwise noted

January 19, 2021

Executive summary

Michigan has the **23rd highest number of cases (↑1)** , **14th highest number of deaths (↓6)**, **46th highest case rate (↑2)**, and **T23rd highest death rate (↓11)** in the last 7 days (source: CDC COVID Data Tracker)

Michigan has the **34th highest hospitalization rate as a percent of total beds (↓1)**, and **16th highest number of COVID patients in the ICU (↓2)** in last 7 days (source: Becker's Hospital Review)

Case rates (287.5, ↑21.7) are plateaued for the third week in a row, **percent positivity** (7.6%, ↓2.2%) is decreasing after a week of increase, and testing has increased

10.7% of available inpatient beds are filled with COVID patients (↓1.4%) and state trends for COVID hospitalizations are decreasing

There were **480 deaths** (↓55) between Jan 3 and Jan 9, and death rate is 6.9 deaths per million residents

Daily diagnostic tests increased to an average of 41.4K per day (↑7.3K) over the last week and the state rate is **3,972.9 tests/million/day** (↑424.3)

512,906 doses reported to MDHHS of 1/19/21 (increase of 216,318 doses)

Science updates on the B.1.1.7 variant, herd immunity threshold and vaccination, and mobility

Comparison across states: Summary 1/18/21

What we see today:

- 5 states seeing increasing 1 week case trends (down vs. 38 last week)
- 46 states (down vs. 47) with significant outbreaks (high/increasing cases, increasing/high positivity increasing/high hospitalizations over 2 weeks (>100 per M))
- Arizona (653/M), Alabama, Georgia, Nevada, California have highest per capita hospitalized patient numbers
- Most rapid 1 week case growth: VA, ME, WA, NH, SC
- Midwest:
  - Wisconsin showing slight drop in hospitalizations (150/M), moderate drop in cases (445/M)
  - Indiana with slight decline in hospitalizations (354/M), and drop in cases (605/M)
  - Illinois showing slow decline in hospitalizations (264/M), cases dropping (460/M)
  - Ohio with declining hospitalizations (322/M) and slow drop in cases (620/M)
  - Michigan showing continued decline in hospitalizations (191/M) and decline in cases (275/M)

COVID-19 Spread

Positivity has decreased to 7.6%, while testing has increased

- Seven MERC regions now below 10%
- Seven MERC regions have a decrease in positivity over the previous week

Case rates are plateaued – note that CDC trend indicator showing declines, but this indicator is fluctuating

- Plateaus are seen among most age groups, races, and ethnicities
  - 0-29 age group may be increasing
- Nearly a third of cases have race and ethnicity missing
- Number of active outbreaks is down 12% from previous week
- Number of reported school outbreaks decreased again since last week (50 to 40) with only outbreaks in high schools having an increase

Confirmed and probable case indicators

Table Date: 1/16/2021 (7 days from date table was produced: 1/9/2021)

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	255.5	decline [8 days]	7.5	Decrease - 1wk	3674.1	0.6	Increase - 1wk	10.6	6.3	Decrease - 4wk
Grand Rapids	2	6	E	310.8	decline [8 days]	8.2	Decrease - 1wk	3922.1	0.8	Decrease - 1wk	9.8	6.7	Decrease - 4wk
Kalamazoo	3	5	E	347.5	decline [7 days]	8.6	Decrease - 1wk	3824.3	0.8	Decrease - 2wk	12.2	6.6	Decrease - 3wk
Saginaw	4	3	E	321.5	decline [58 days]	8.0	Decrease - 1wk	3854.0	0.3	Decrease - 1wk	12.5	13.1	Decrease - 4wk
Lansing	5	1	E	306.6	decline [9 days]	8.0	Decrease - 1wk	3430.0	0.3	Decrease - 5wk	14.2	5.6	Decrease - 1wk
Traverse City	6	7	E	281.7	decline [7 days]	8.0	Increase - 2wk	3094.7	0.8	Decrease - 1wk	6.2	7.8	Decrease - 2wk
Jackson	7	1	E	444.3	decline [6 days]	10.9	Decrease - 1wk	4732.6	0.2	Decrease - 1wk	13.5	8.0	Increase - 1wk
Upper Peninsula	8	8	E	281.7	decline [8 days]	3.8	Decrease - 1wk	5394.5	0.5	Decrease - 1wk	7.1	7.1	<20 wkly deaths
Michigan			E	287.5	decline [8 days]	7.6	Decrease - 1wk	3972.9	0.6	Decrease - 7wk	10.7	6.9	Decrease - 4wk

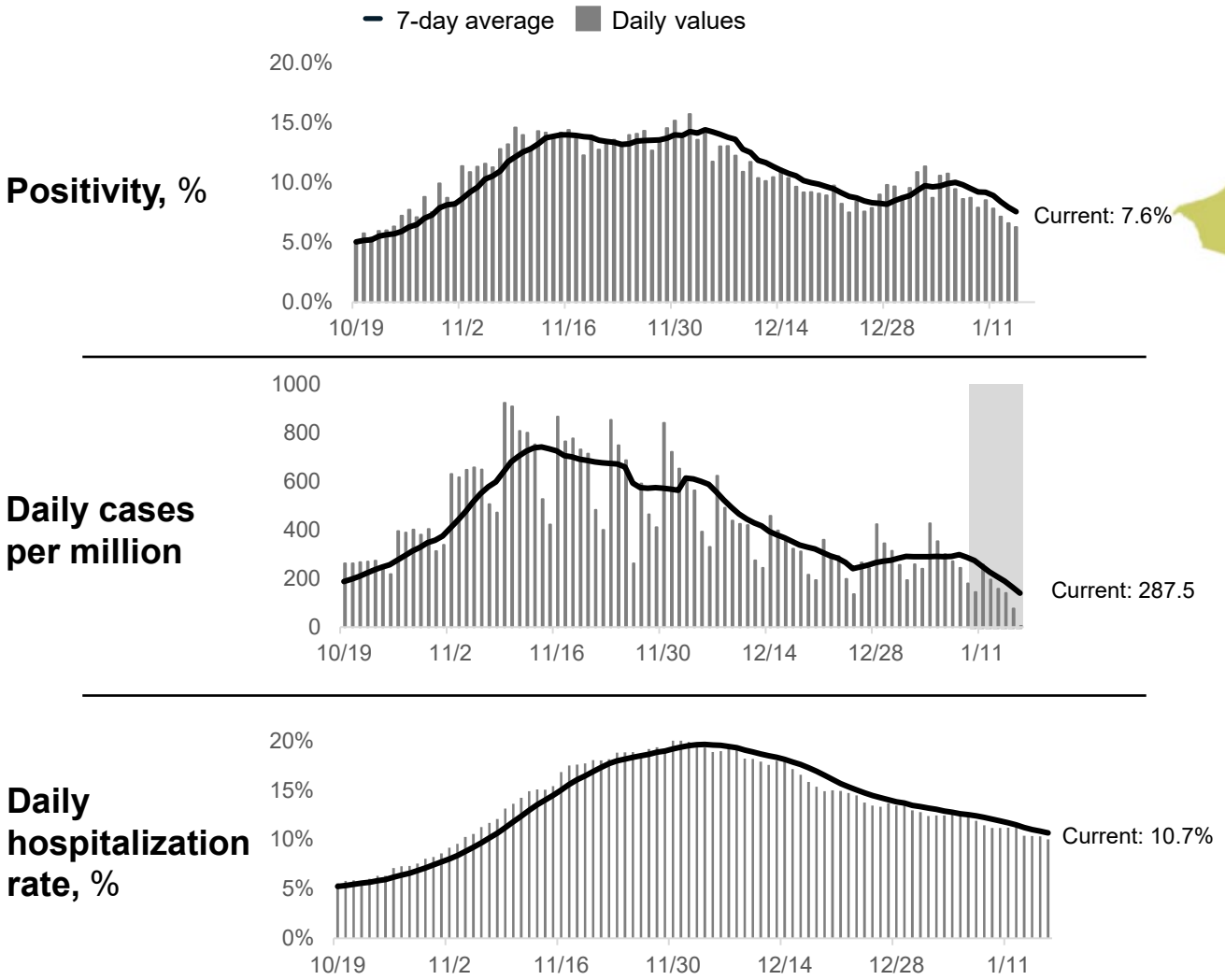
Cases Low: <7 | A: 7-20 | B: 20-40 | C: 40-70 | D: 70-150 | E: >=150

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

PUBLIC HEALTH

Recent statewide trends

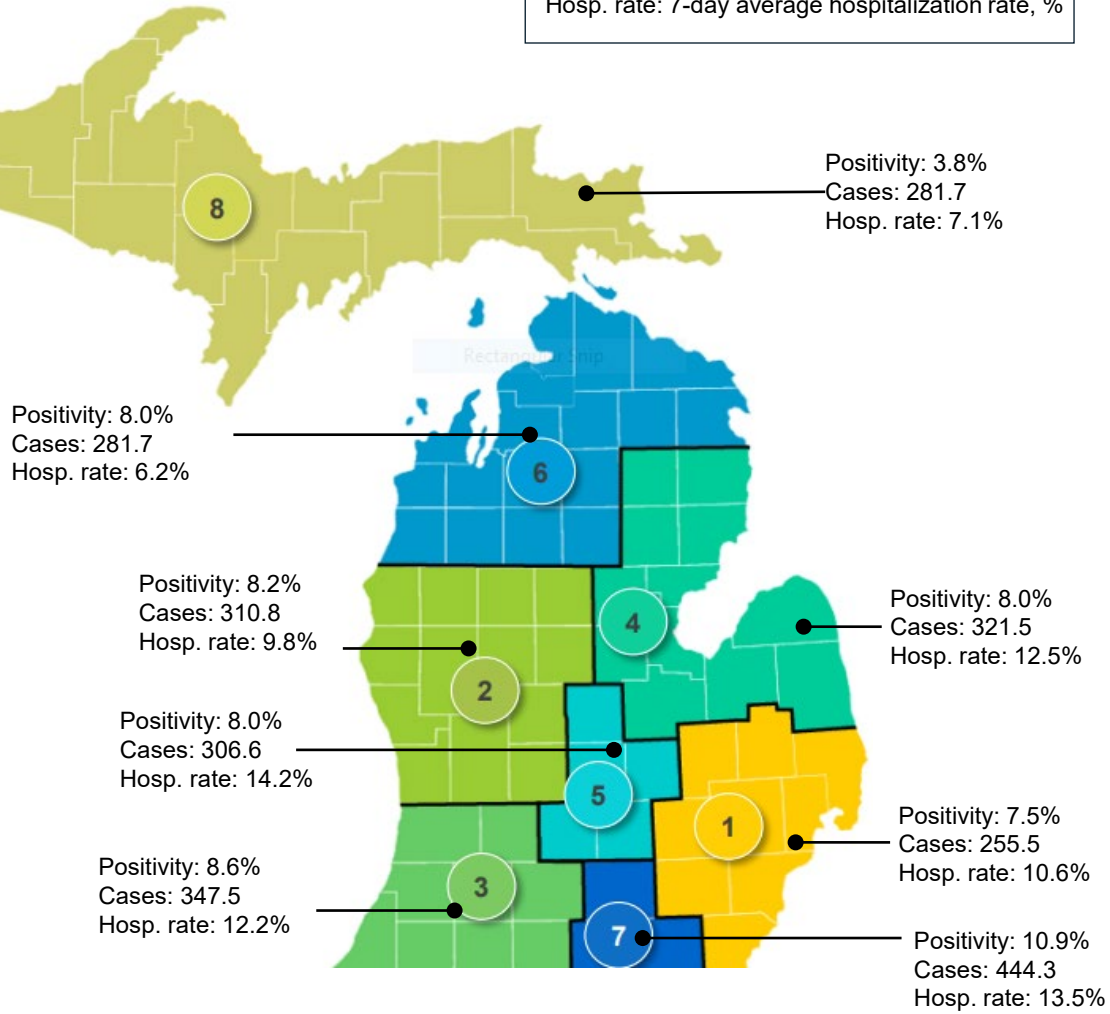
Statewide trends



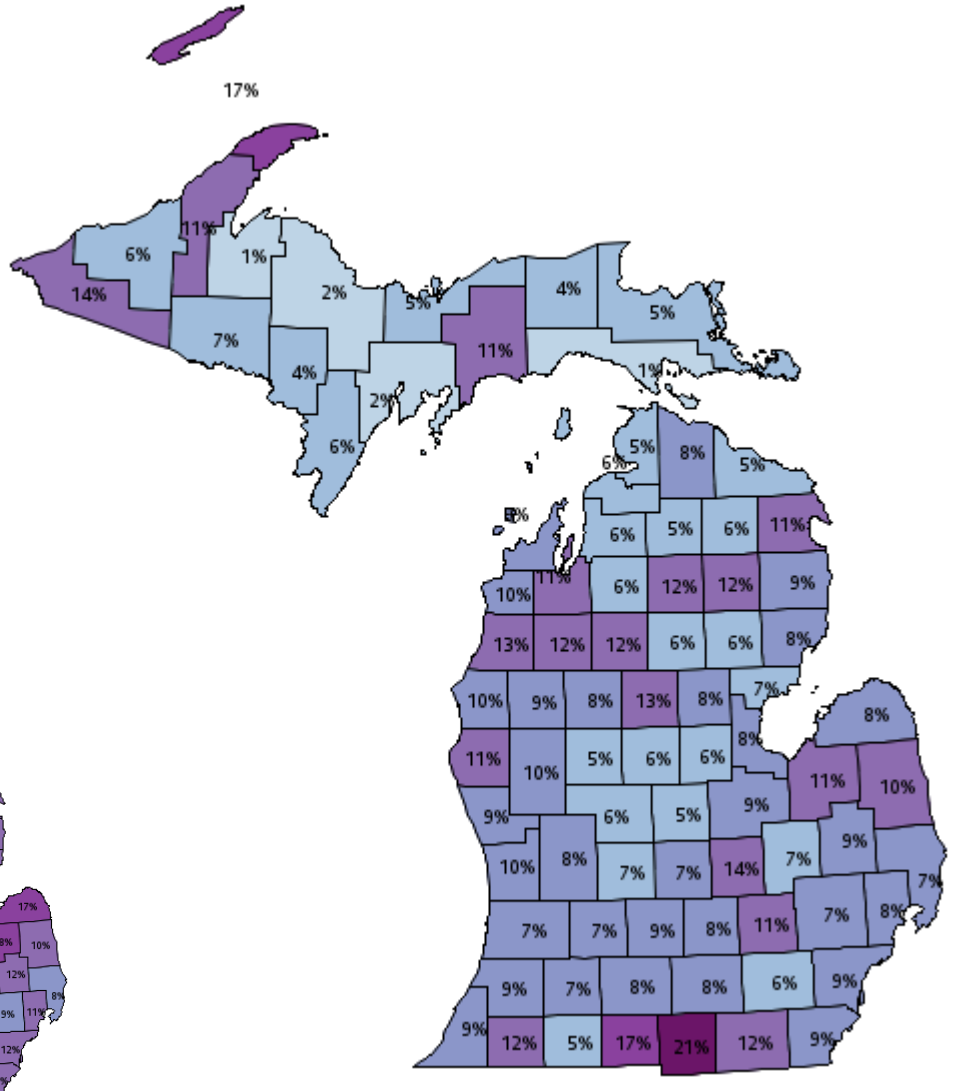
Source: https://mistartmap.info/

Regional breakdown: Cases, hospitalization rate, and positivity

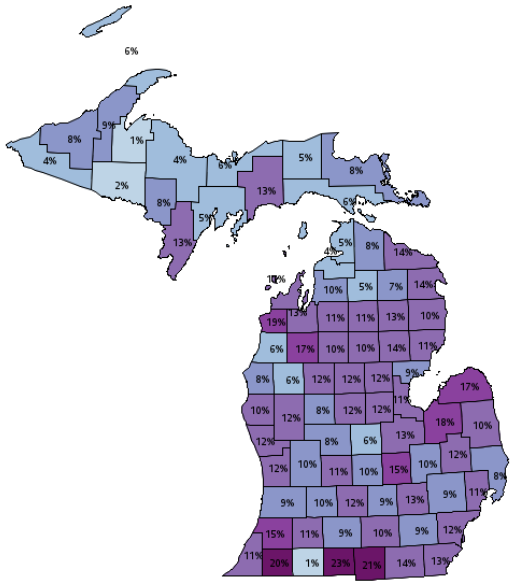
Positivity: 7-day average positivity, %
Cases: 7-day average cases per million
Hosp. rate: 7-day average hospitalization rate, %



Positivity by county, 1/8-1/14



Last week, 1/1-1/7



Average positivity per day	# of counties	This week	Last week*
<3%		4	3
3-7%		26	13
7-10%		32	21
10-15%		18	37
15-20%		2	6
>=20%		1	3

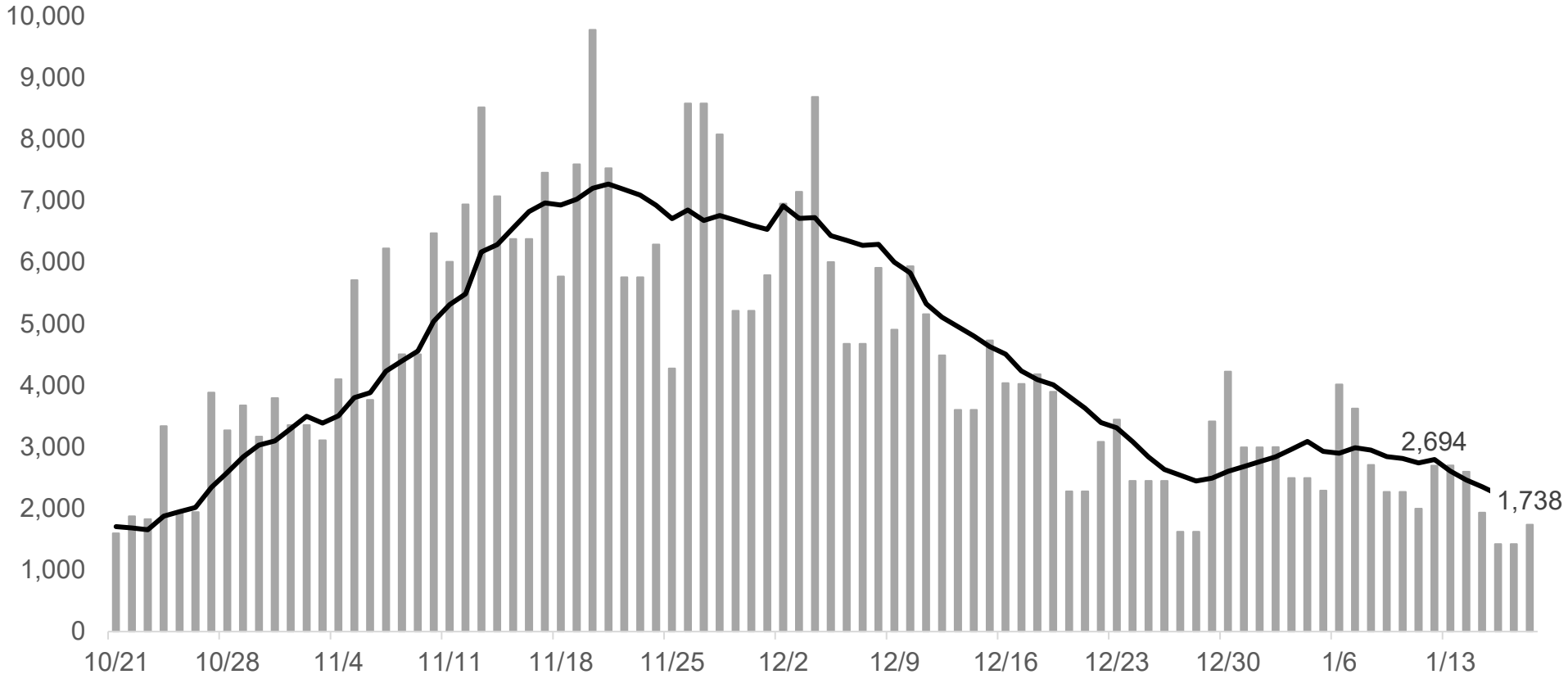
Updates since last week:

21 of 83 counties saw double digit positivity in the last week (25 county decrease)

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)



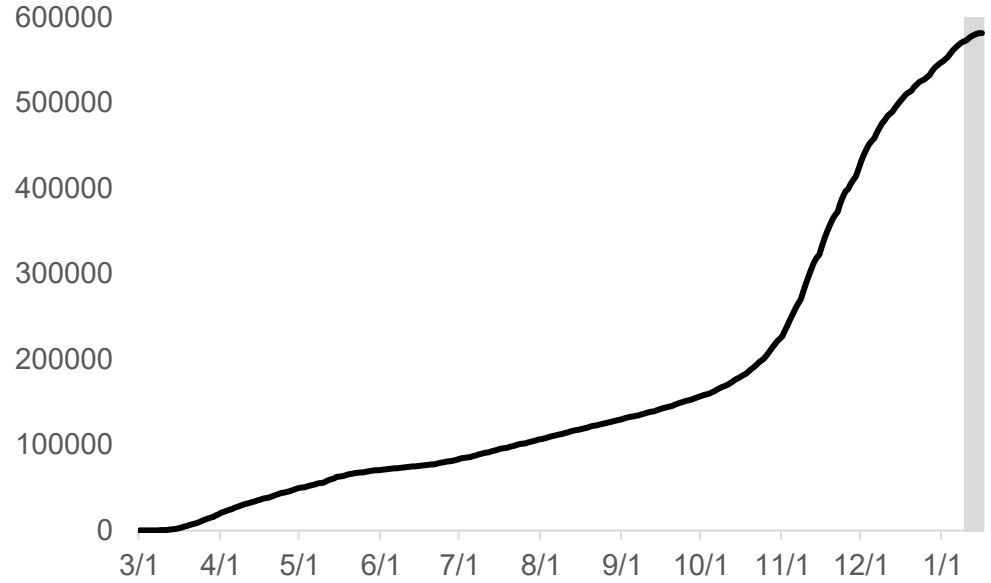
The number of weekly reported cases to public health is remaining about the same

In the last week, 14,502 cases reported

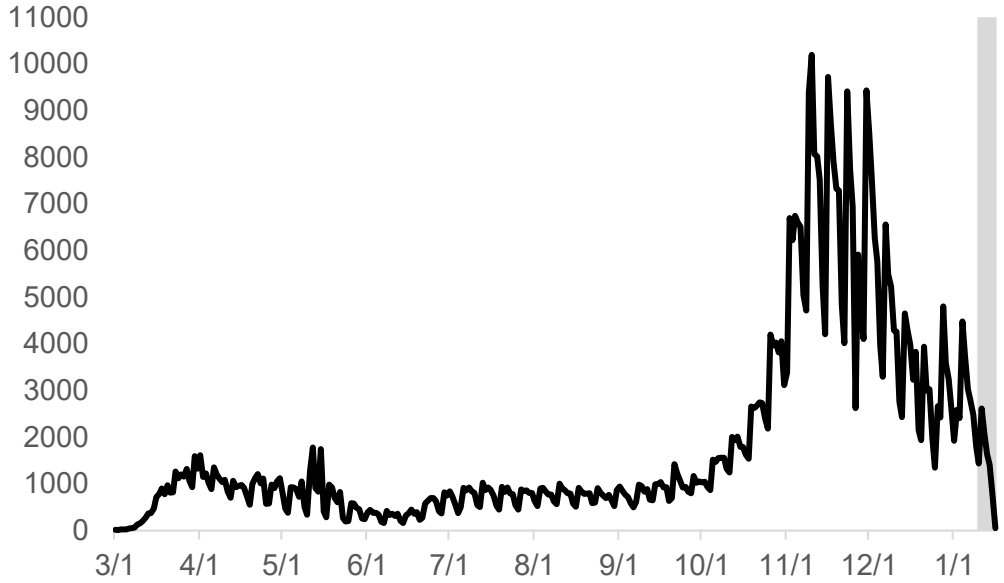
Source: MDHHS – Michigan Disease Surveillance System

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



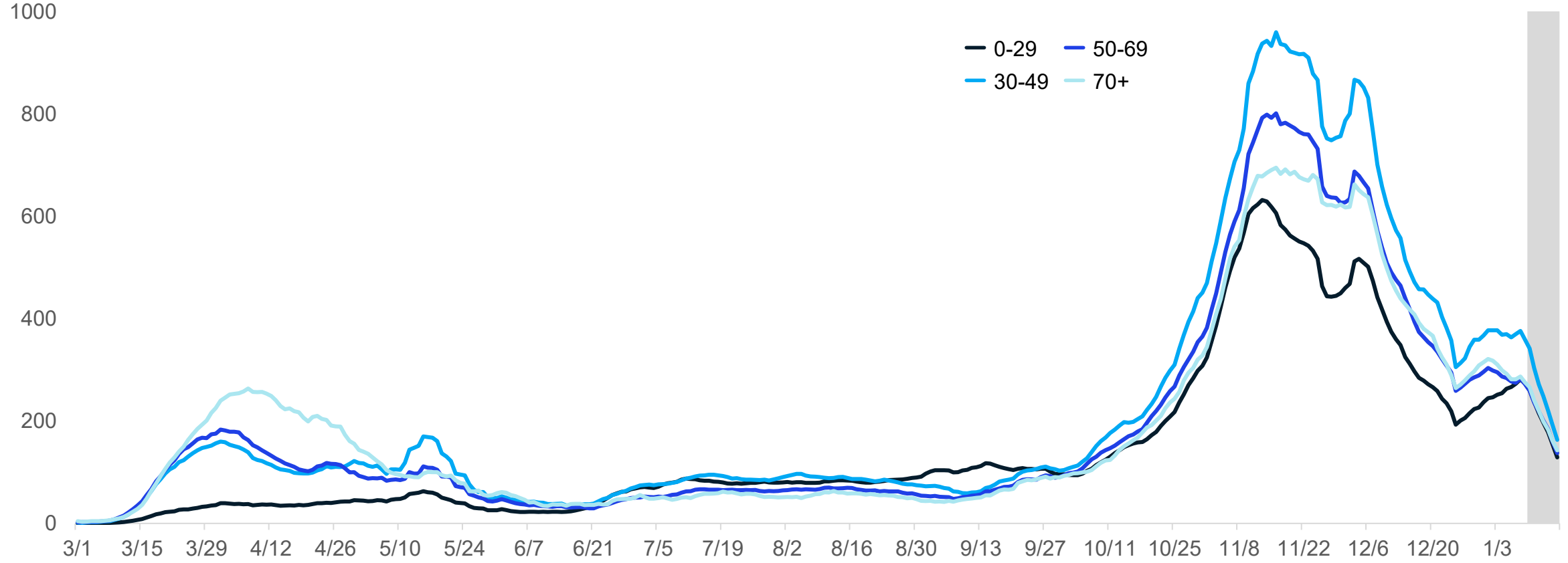
Updates since last week:

- Cases are now at a plateau
- Current statewide daily case rate remains more than 1.5x the highest risk level (risk level E is 150 cases/million)
- More than half of regional case rates are 2x the risk level E threshold

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)

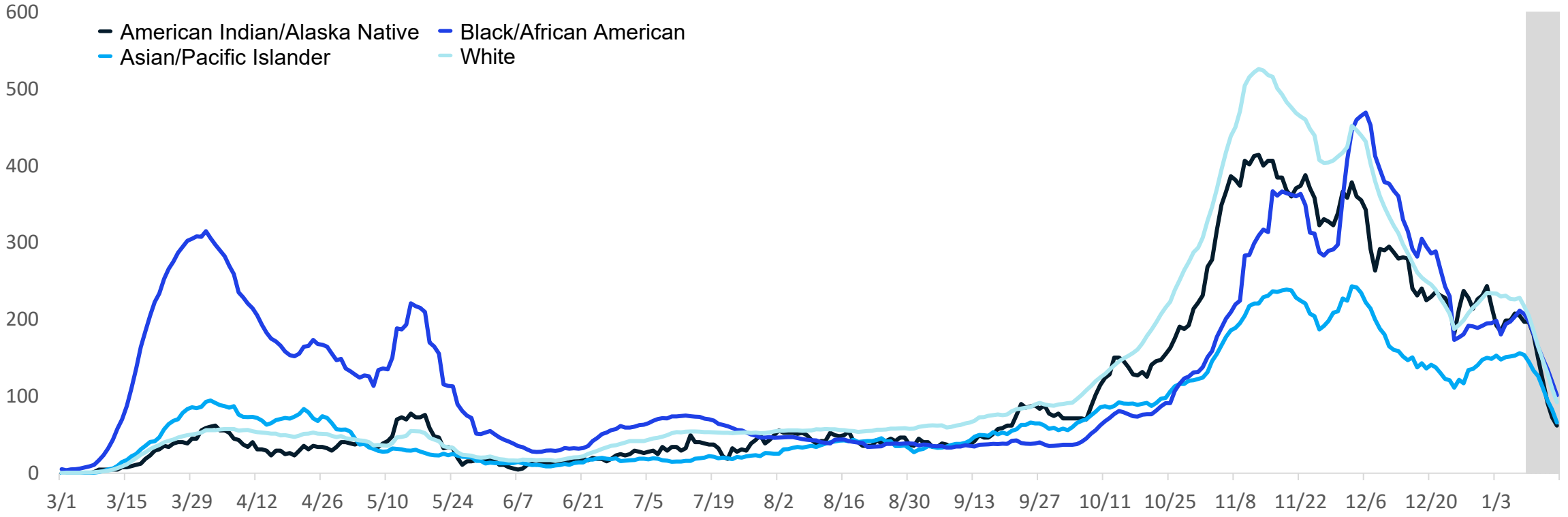


- 30-49 age group continues to have the highest cases per million
- 0-29 age group has continued to increase (200 to 275) while other age groups have plateaued or are decreasing

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



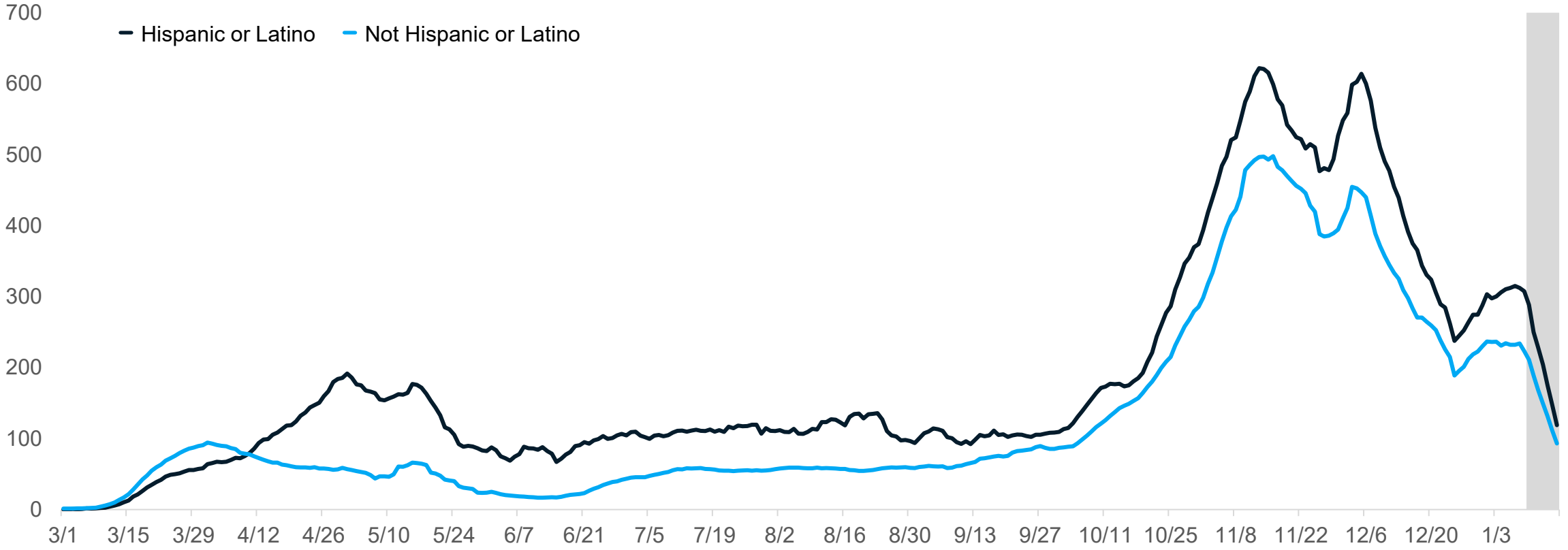
- Cases per million continue plateau for most racial groups
- 30% of all cases represent unknown, multiple, or other races

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



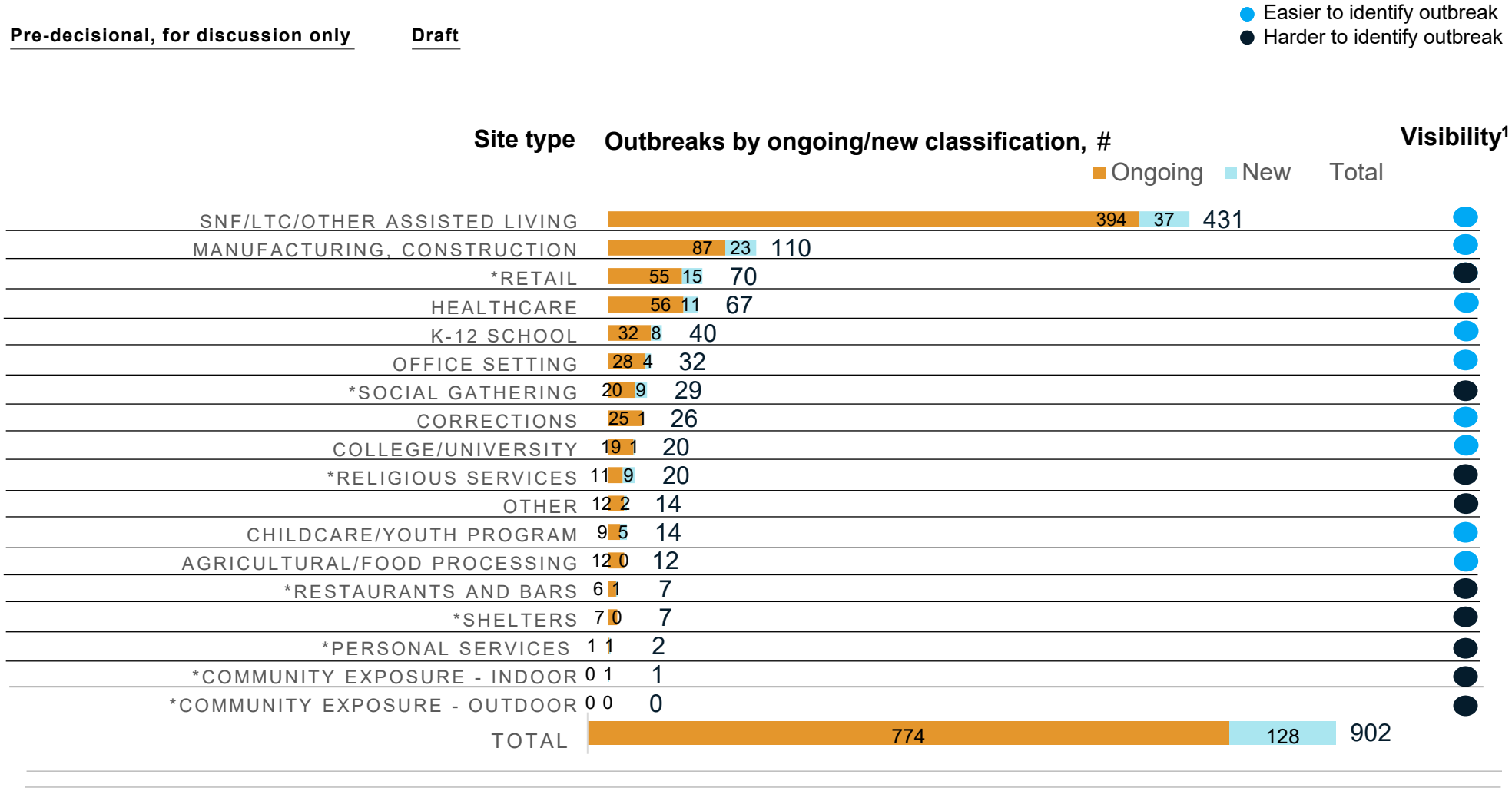
- Cases per million are plateauing for both Hispanic/Latinos and non-Hispanic/Latinos
- 26% of all cases have an unknown ethnicity reported

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 Jan 14

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



Total number of active outbreaks is down 12% from previous week

Following LTCs, the greatest number of new outbreaks were reported in manufacturing/ construction (23), retail (15), healthcare (11), religious services (9), social gatherings (9) and K-12 schools (8).

LHDs reported new outbreaks in all settings except agriculture/food processing, shelters, and outdoor community exposure

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 Jan 14

Number of reported outbreaks decreased since last week (50 to 40) including reductions in Middle/Jr High (12 to 7),

Pre K-Elementary (22 to 19), and Administrative (6 to 3). Only High Schools saw an increase in the number of reported outbreaks (10 to 12).

Region	Number of reported cases, #	# Ongoing - Excluding New	# New	Number of outbreaks	Range of cases per outbreak
Region 1	33	33	15	6	4-12
Region 2n	4	4	0	1	4-4
Region 2s	8	8	2	2	2-8
Region 3	146	125	21	17	5-19
Region 5	16	6	10	2	6-10
Region 6	89	84	5	10	2-16
Region 7	2	0	2	1	2-2
Region 8	5	5	0	1	5-5
Total	**320**	**265**	**55**	**40**	**2-19**

Grade level	Number of reported cases, #	# Ongoing - Excluding New	# New	Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	133	110	23	19	4-19
Jr. high/middle school	73	69	4	7	1-16
High school	101	73	28	12	10-17
Administrative	15	15	0	2	3-7
Total	**322**	**267**	**55**	**40**	**3-19**

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

COVID-19 and Healthcare Capacity and COVID Severity

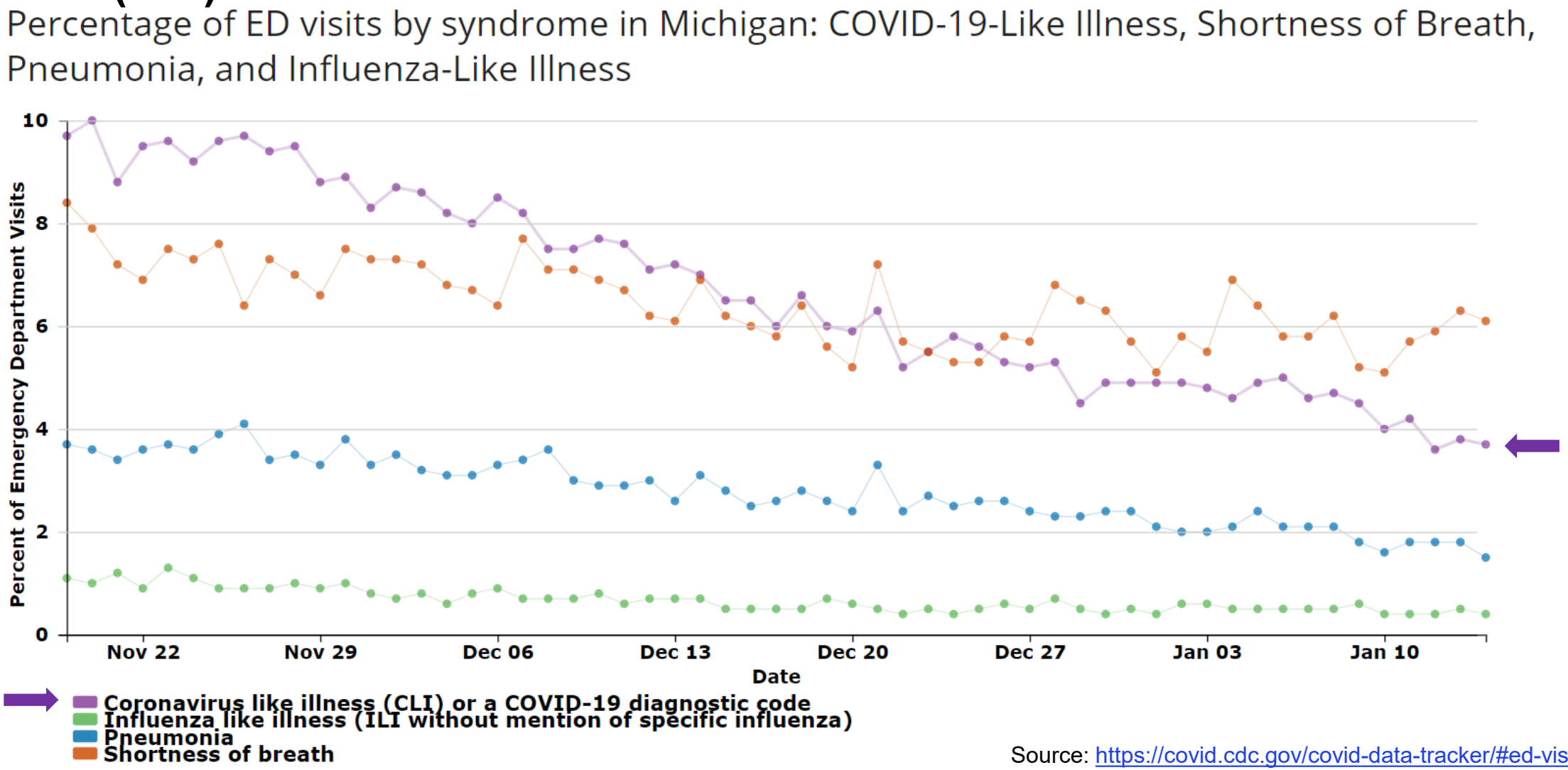
Hospitalizations and ICU utilization are decreasing

- COVID-like illness (CLI) continues with downward trend
- Hospitalizations down 52% since December 1st peak
- ICU occupancy declined 7% over last week
- All regions at or below 20% of Adult ICU beds with patients positive for COVID-19

Current deaths are a lagging indicator of cases, but the number of deaths have declined for fourth consecutive week

- Decreases in deaths seen among most ages, ethnicities, and races

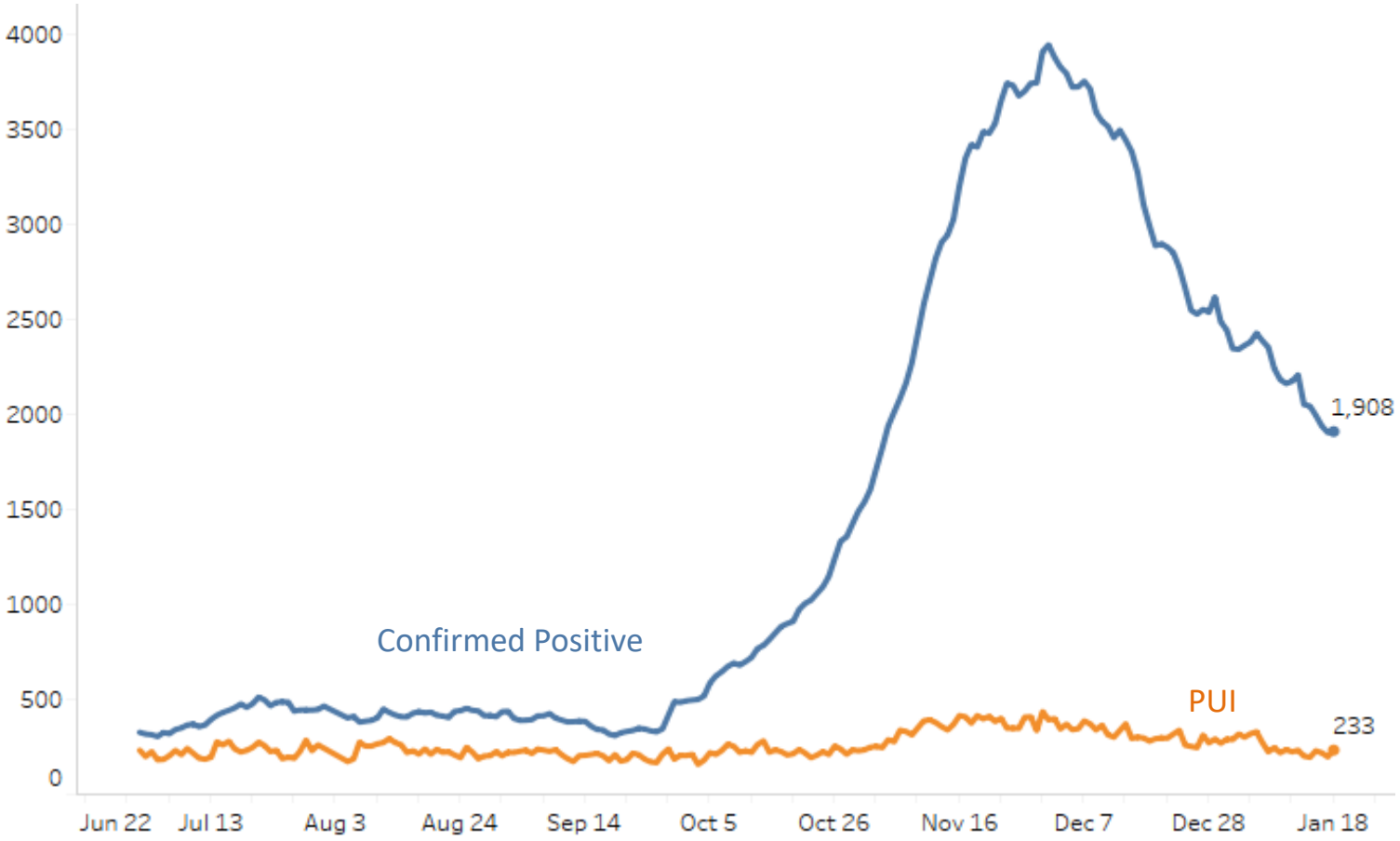
Michigan Trends in Emergency Department Visits for COVID-19-Like Illness (CLI)



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

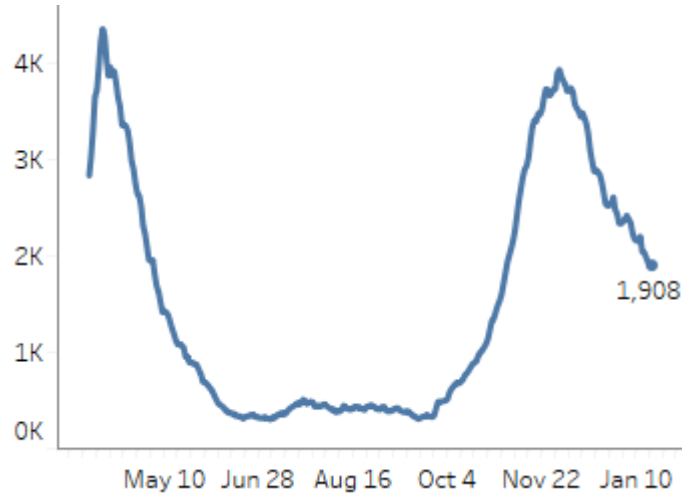
Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 7/1/2020 – 1/18/2021
Confirmed Positive



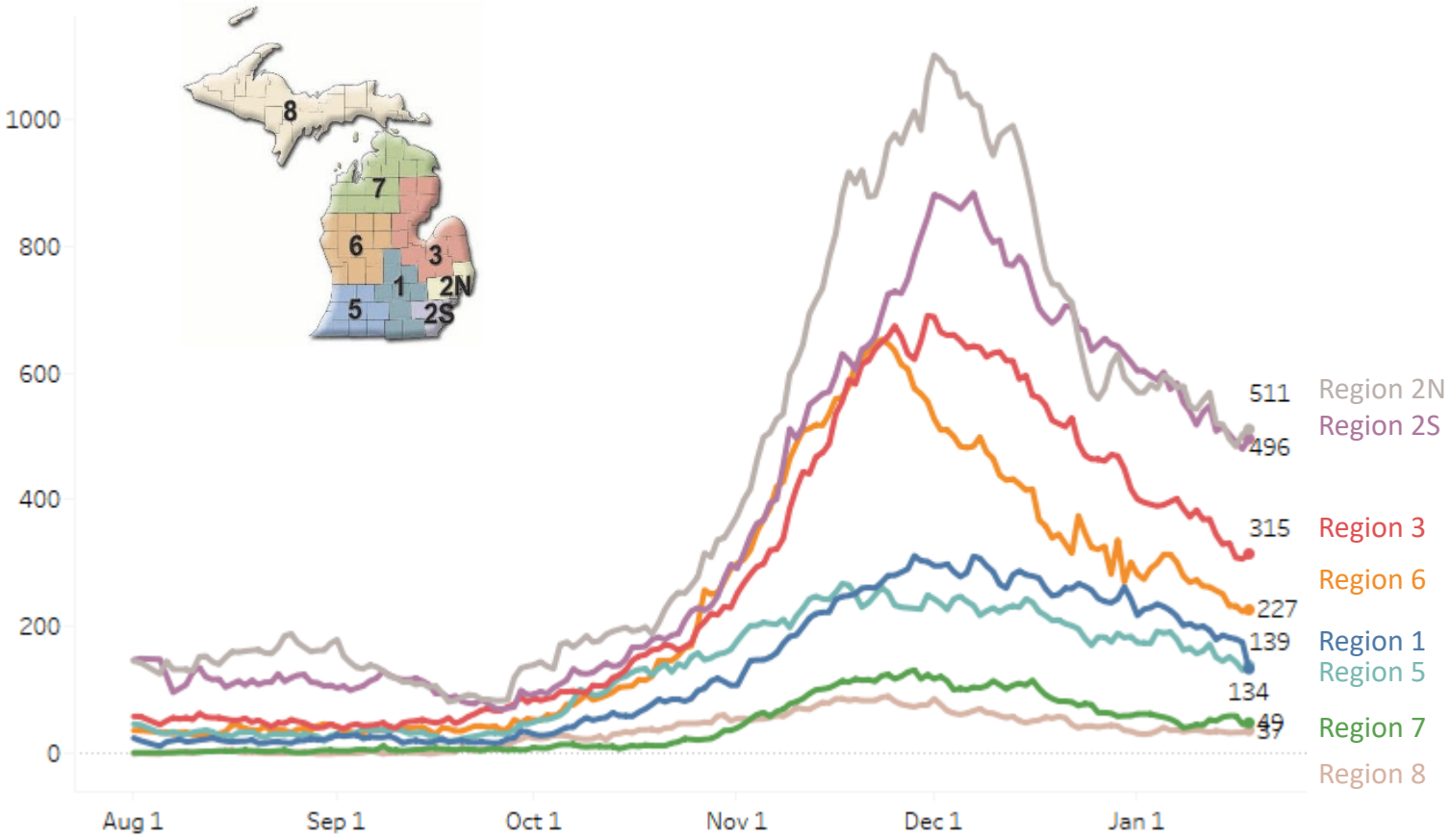
This week, total COVID+ census in hospitals is down 12% from the previous week and 52% down from the December 1 peak.

Hospitalized COVID Positive Long Term Trend (beginning March)



Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 8/1/2020 – 1/18/2021
Confirmed Positive by Region



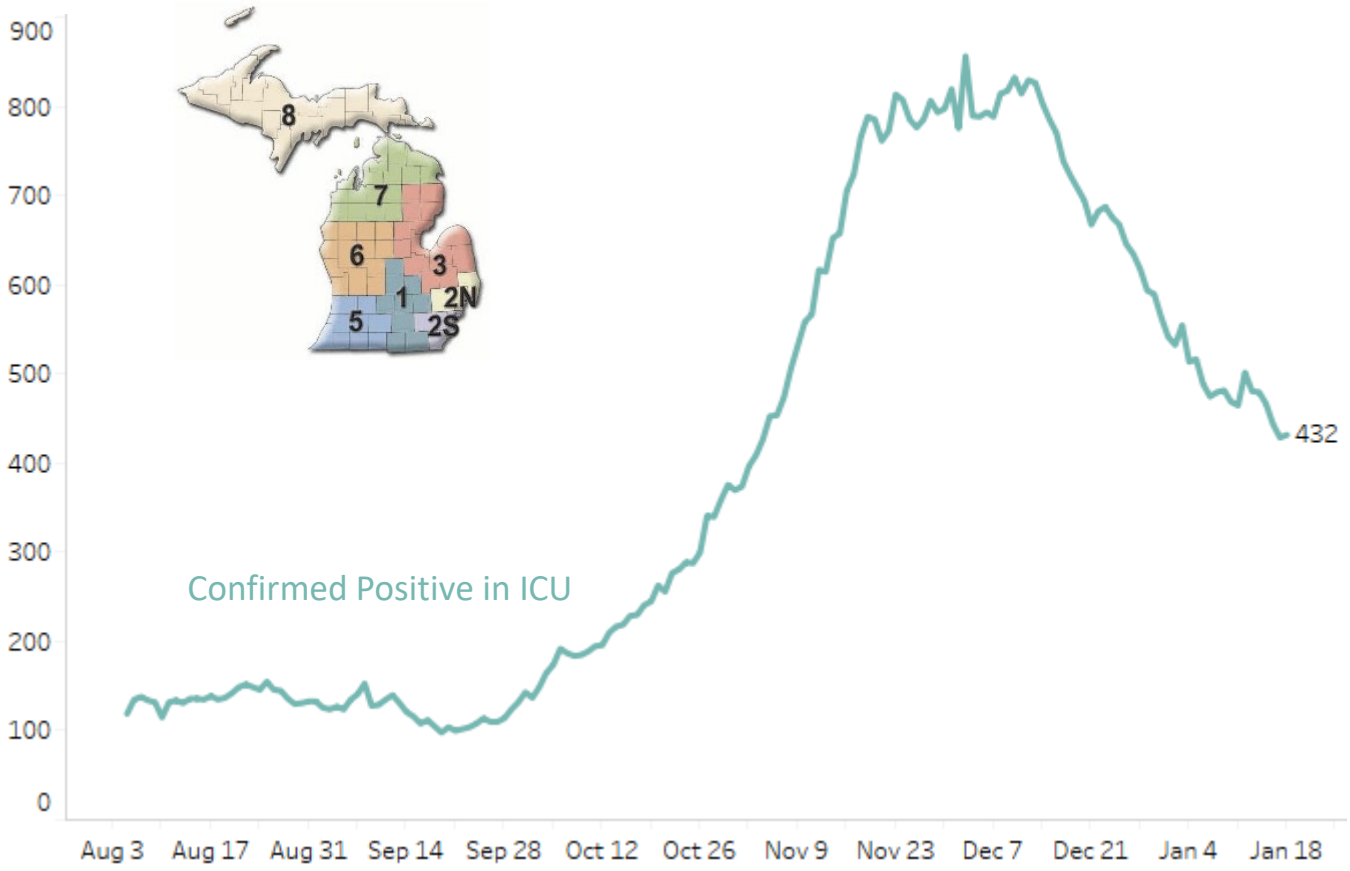
Most regions are showing decreasing or flat trends in COVID+ hospital census.

Regions 7 and 8 are up slightly this week, though total volume hospitalized in these regions remains very low.

Region	Trend from Last Week	COVID+ Hospitalizations / MM
Region 1	-33%	124/M
Region 2N	-8%	230/M
Region 2S	-8%	223/M
Region 3	-15%	278/M
Region 5	-14%	145/M
Region 6	-14%	155/M
Region 7	9%	98/M
Region 8	3%	119/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 8/1/2020 – 1/18/2021
Confirmed Positive in ICUs



The census of COVID+ patients in ICUs have declined over the past week by 7% from the previous week.

Regions 2N, 7, 8 saw some increases in ICU census this week although total census in regions 7+8 is low.

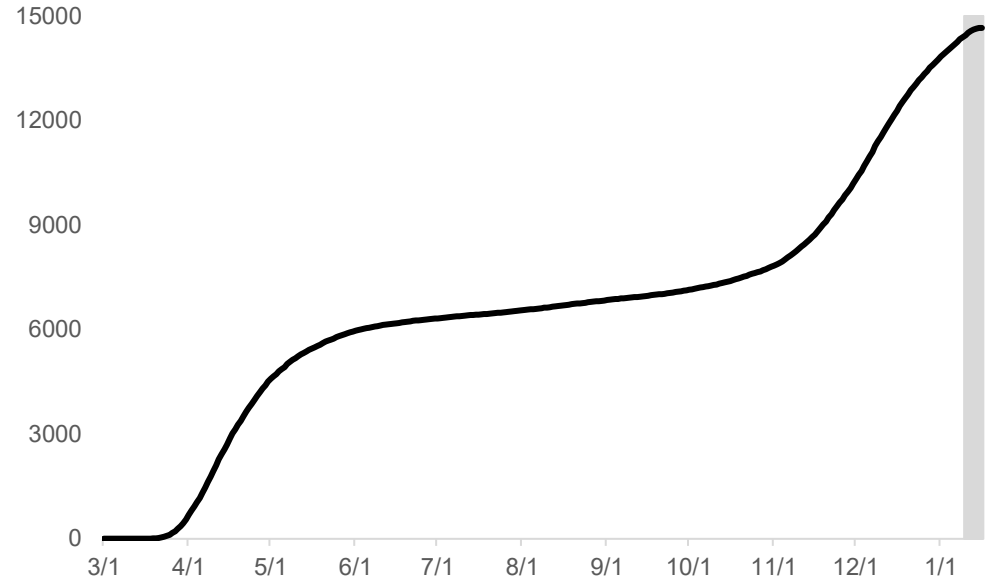
No regions have >20% of ICU beds occupied by COVID+ patients.

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	33 (-28%)	91%	17%
Region 2N	92 (+19%)	80%	16%
Region 2S	117 (-19%)	80%	15%
Region 3	72 (-4%)	88%	20%
Region 5	16 (-27%)	78%	11%
Region 6	60 (-10%)	64%	17%
Region 7	31 (+15%)	72%	17%
Region 8	11 (+57%)	72%	19%

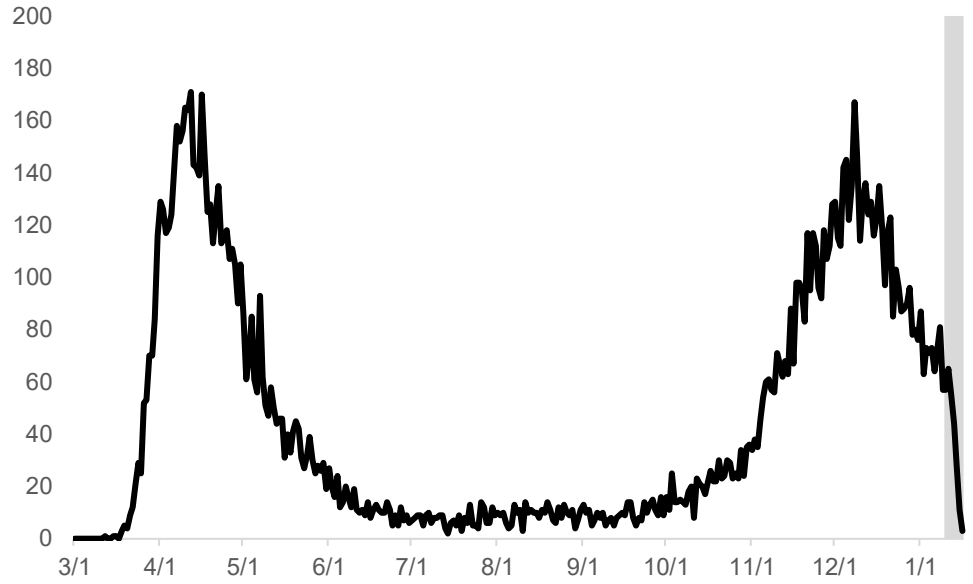
Hospital bed capacity updated as of 1/15

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

Cumulative confirmed and probable deaths, by date of death



New confirmed and probable deaths , by date of death



Updates since last week:

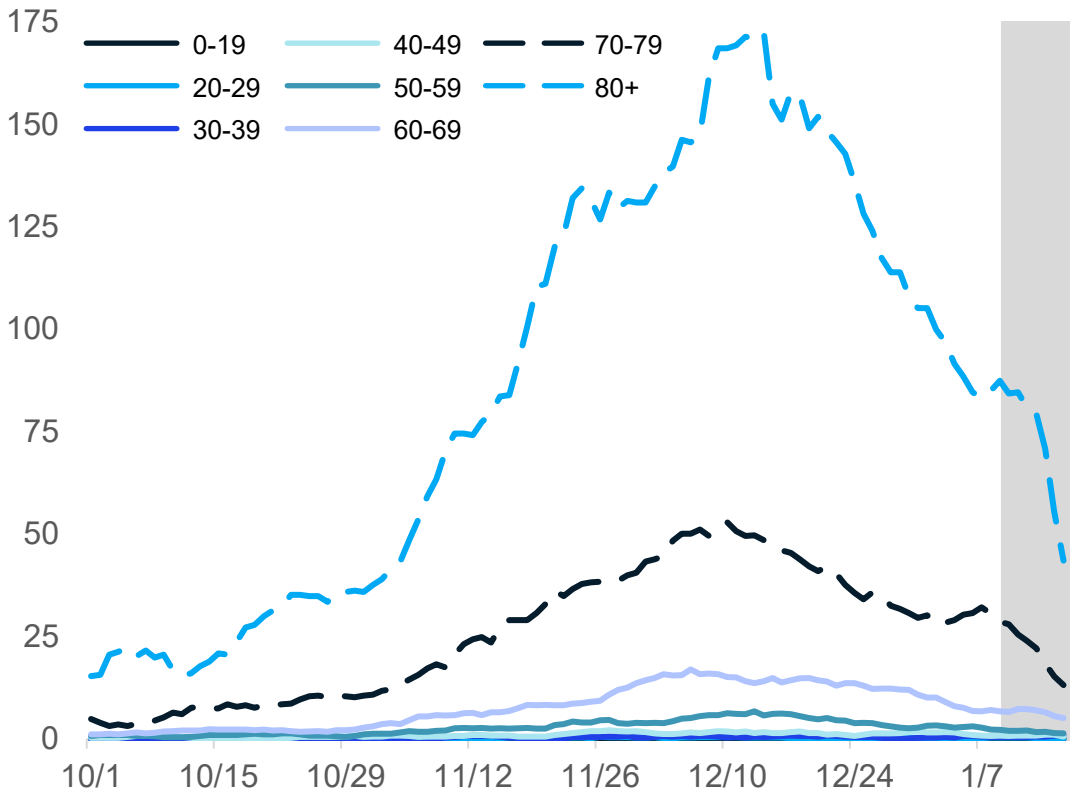
Although deaths are a lagging indicator of cases, the number of deaths have declined for four weeks

The current number of deaths is more than 5x the number of deaths in early October

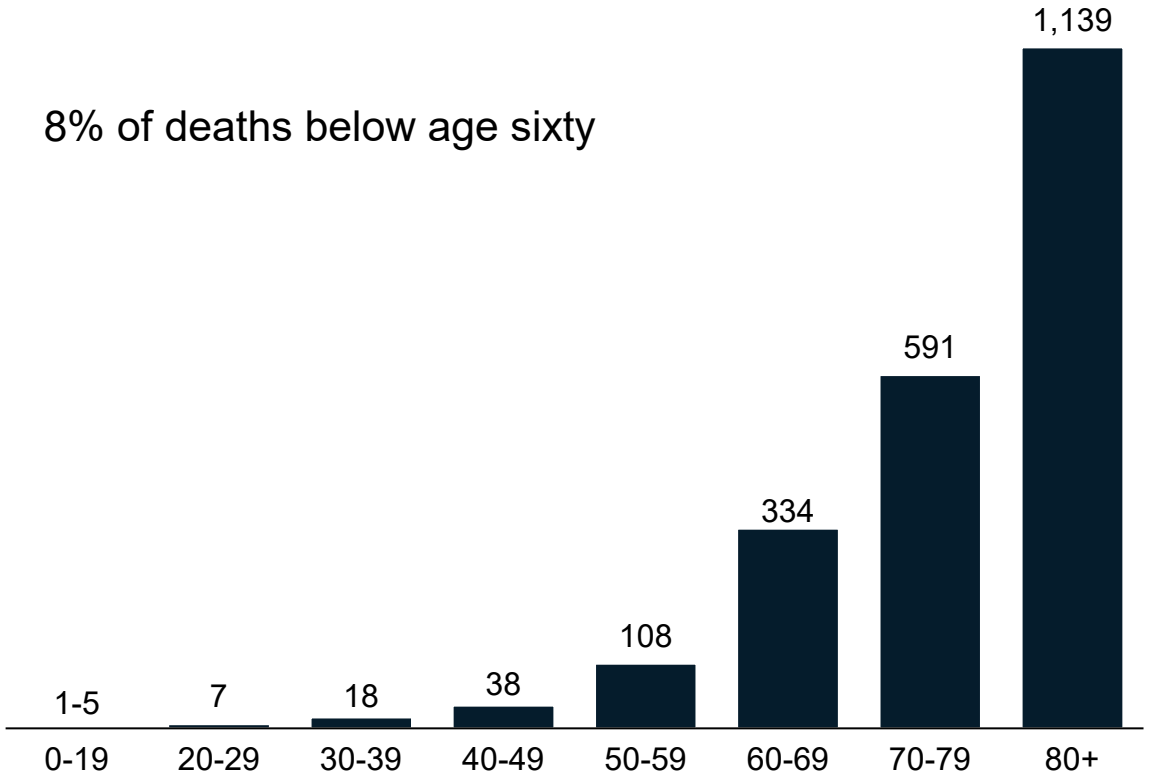
Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System

Average and total new deaths, by age group

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



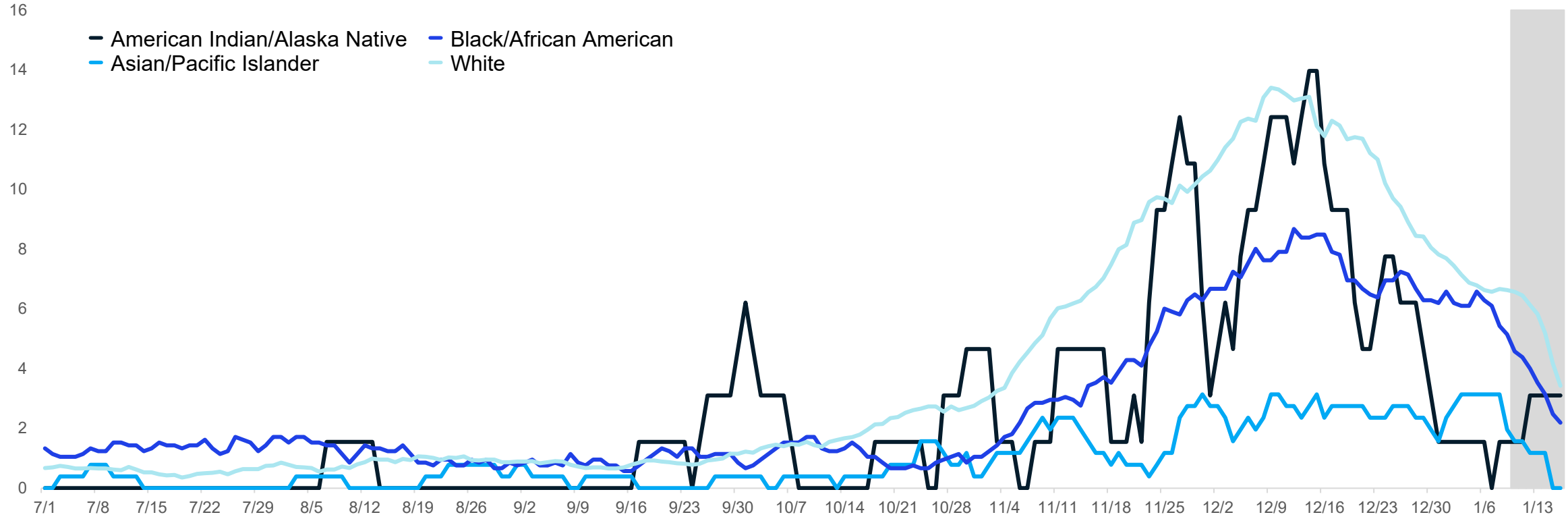
Total new confirmed and probable deaths by age group (past 30 days, ending 1/9/2021)



Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.

Source: MDHHS – Michigan Disease Surveillance System

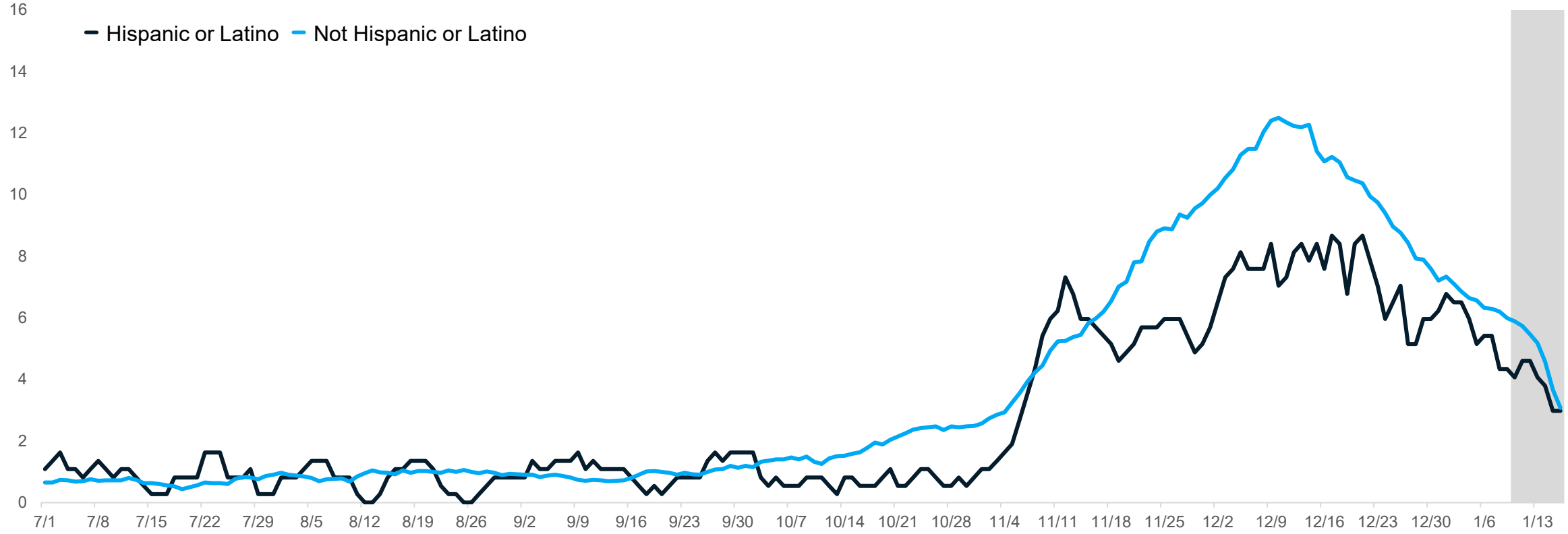
Average daily new deaths per million people by race



- Deaths per million continue to decrease among racial groups
- Whites have the most reported deaths per capita
- The large fluctuation seen among American Indian/Alaskan Native is due to small population size

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

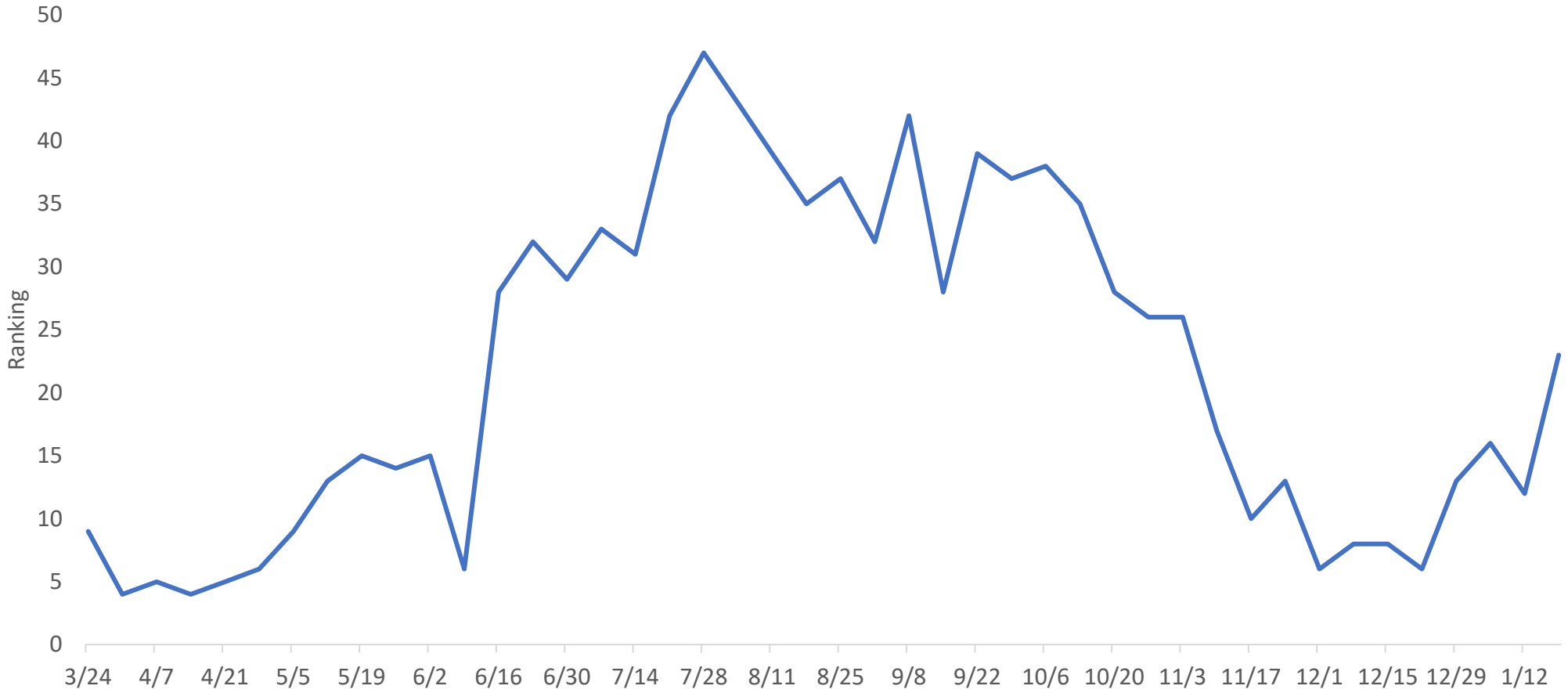


- Deaths are a lagging indicator of cases
- Deaths per million continue to decrease for Hispanic/Latino and non-Hispanic/Latino
- There are fewer Hispanic/Latino deaths per million than non-Hispanic/Latino but these are not adjusted for confounders

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

Michigan's National Ranking for Deaths per 100,000

Including DC and NYC



Fewer deaths compared to other states

More deaths compared to other states

Source: CDC COVID data tracker and U.S. Census

How is public health capacity?

Testing volume has increased slightly from last week to 49,466

- 14.9% are antigen tests
- Testing by county ranges from 900 to 11,000 daily tests per million residents

Case investigations improving after the holiday dip

- Consistent proportion of cases interviewed have a source of known infection (indicating community spread)
- Among those cases interviewed, there continues to be a low proportion of those quarantining when their symptoms begin

Testing Overview

PCR (Molecular) Tests						
Metric	Scope	*Target*	CURRENT	Previous	Trend	Status
Daily Average Tests last 7 days	Overall w/MDOC	*58,000*	41,741	41,139	-Stable-	over 20% away
Daily AVG per Mil. last 7 days	Overall w/MDOC	*4,000*	4,176	4,116	-Stable-	within 5%
Daily Average Tests last 7 days	MDOC ONLY	*464*	2,602	2,451	Increasing ▲	over 20% away
% Counties Test 4,000/Mil./day	Overall No MDOC	*100%*	17.9%	17.9%	-Stable-	over 20% away
Daily % Positive last 7 days	Overall No MDOC	*3.0%*	7.2%	9.5%	Decreasing ▼	over 20% away
% Counties **≥15% Positivity**	Overall No MDOC	*0.0%*	1.2%	8.3%	Decreasing ▼	over20% away
% Counties **≥10% Positivity**	Overall No MDOC	*0.0%*	16.7%	51.2%	Decreasing ▼	over 20% away
% Counties **>5% Positivity**	Overall No MDOC	*10.0%*	75.0%	88.1%	Decreasing ▼	over 20% away

Antigen (rapid) Tests						
Metric	Scope	*Target*	CURRENT	Previous	Trend	Status
Daily Average Tests last 7 days	Overall w/MDOC	*TBD*	7,049	6,547	Increasing ▲	---
Daily AVG per Mil. last 7 days	Overall w/MDOC	---	705	655	Increasing ▲	---
Daily Average Tests last 7 days	MDOC ONLY	---	37	66	Decreasing ▼	---
% Counties Test 400/Mil./day	Overall No MDOC	---	83.8%	86.9%	Decreasing ▼	---
Daily % Positive last 7 days	Overall No MDOC	---	3.5%	3.4%	Increasing ▲	---
% Counties **≥15% Positivity**	Overall No MDOC	---	1.3%	3.6%	Decreasing ▼	---
% Counties **≥10% Positivity**	Overall No MDOC	---	5.0%	6.0%	Decreasing ▼	---
% Counties **≥5% Positivity**	Overall No MDOC	---	21.3%	19.0%	Increasing ▲	---

49,466 (↑11,875)

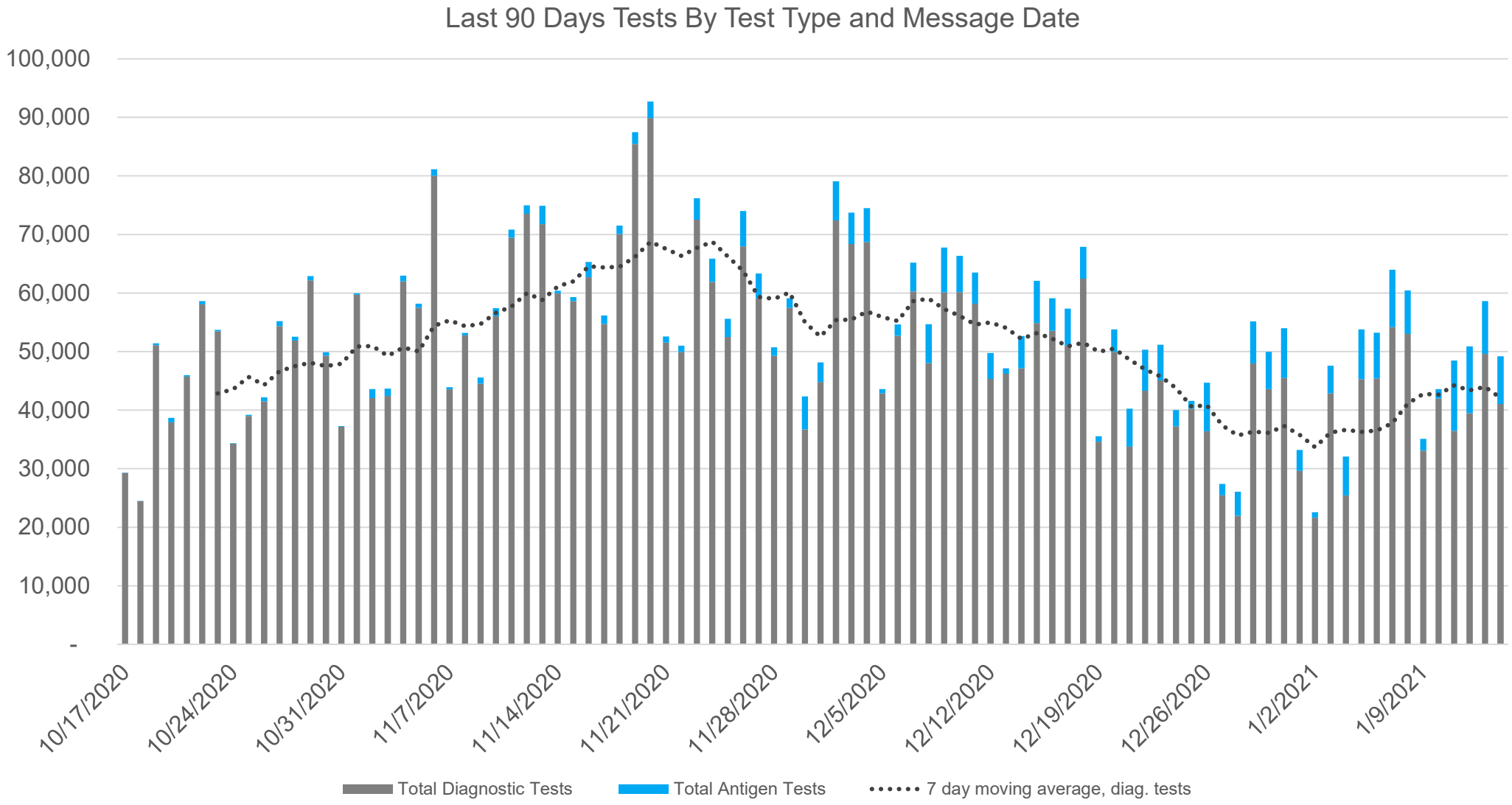
Rolling 7-day average daily diagnostic tests reported to MDHHS

14.9% are antigen tests over the past week

- 3.5% positivity in antigen tests

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

Daily diagnostic tests, by message date



49,466 (↑11,875)

Rolling 7-day average daily diagnostic tests reported to MDHHS

14.9% are antigen tests over the past week

- 3.5% positivity in antigen tests

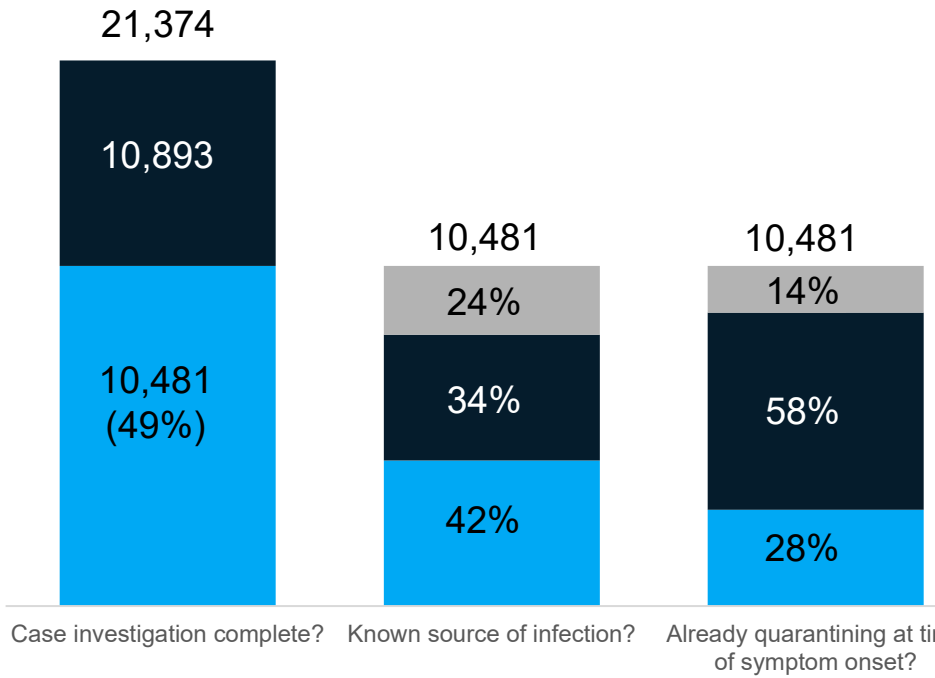
Source: MDSS/Michigan Medical Advantage Group, MDHHS, testing labs

New Case Investigation Metrics

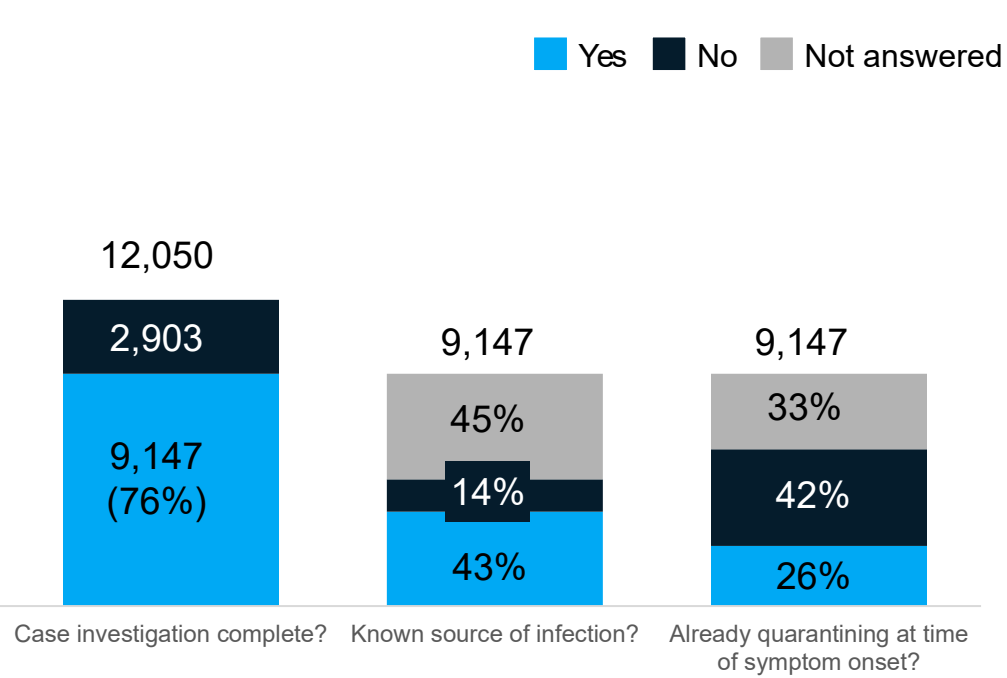
New Communicable Disease metrics slightly increased since last week:

- 43% of investigated cases having a known source (42% last week, 46% week prior)
- 26% of investigated cases noting that they were quarantining before symptoms (28% last week)

01/02-01/08 Case report form information



01/09-01/15 Case report form information



Source: MDHHS – Michigan Disease Surveillance System

COVID-19 Vaccination and Serology

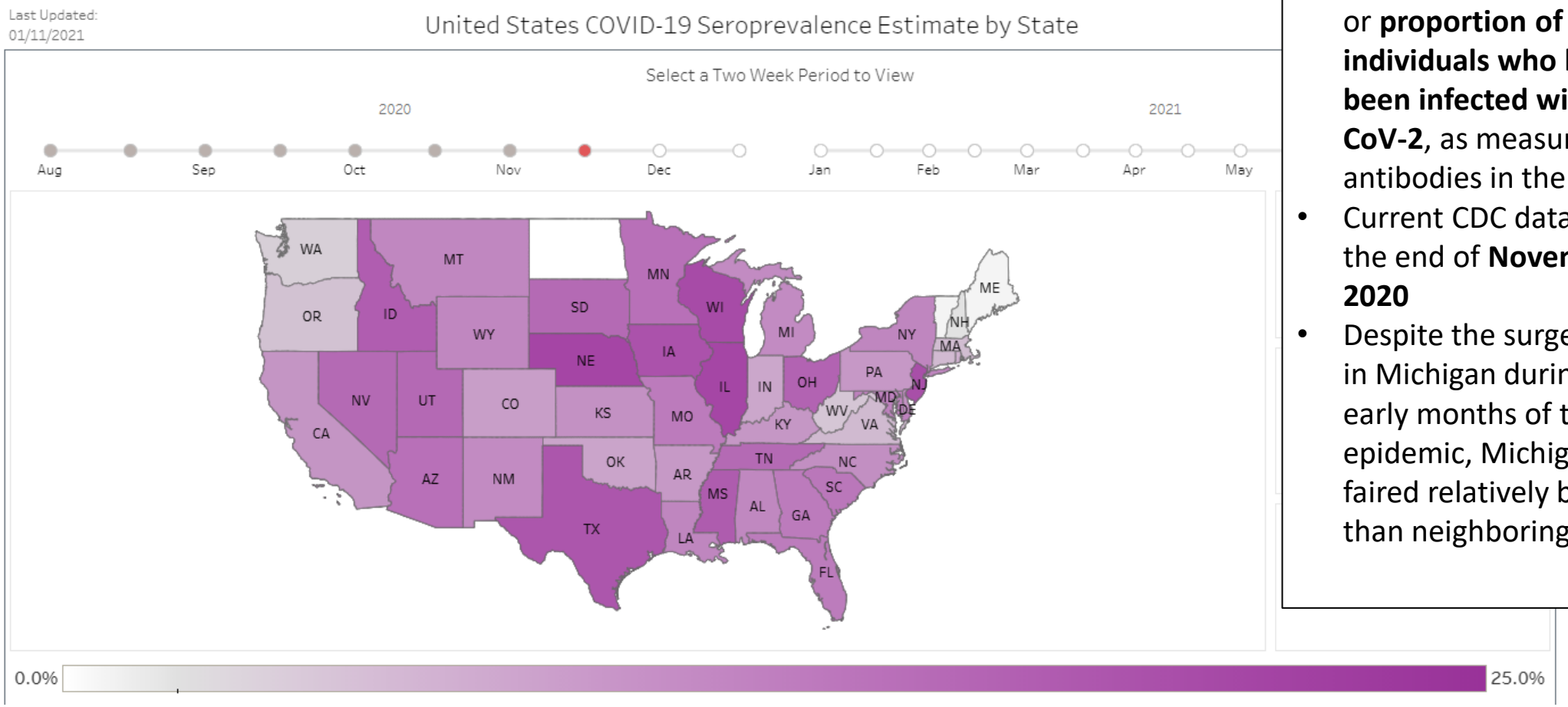
Seroprevalence of COVID in Michigan is 8.8%

- On Monday, January 11, CDC published national data (through November 2020)
- Michigan faired relatively better than neighboring states of Wisconsin, Illinois, and Ohio
- More individuals have likely been infected than have been identified through disease surveillance and reporting
- Individuals not identified were possibly asymptomatic or never received medical care for COVID-19
- Younger age is associated with a higher likelihood of seroprevalence

COVID-19 Vaccination

- 5.4% of Michiganders have first dose of vaccine (up from 3.2 last week)
- 512,906 doses reported to MDHHS, including 437,027 first doses and 75,879 second doses

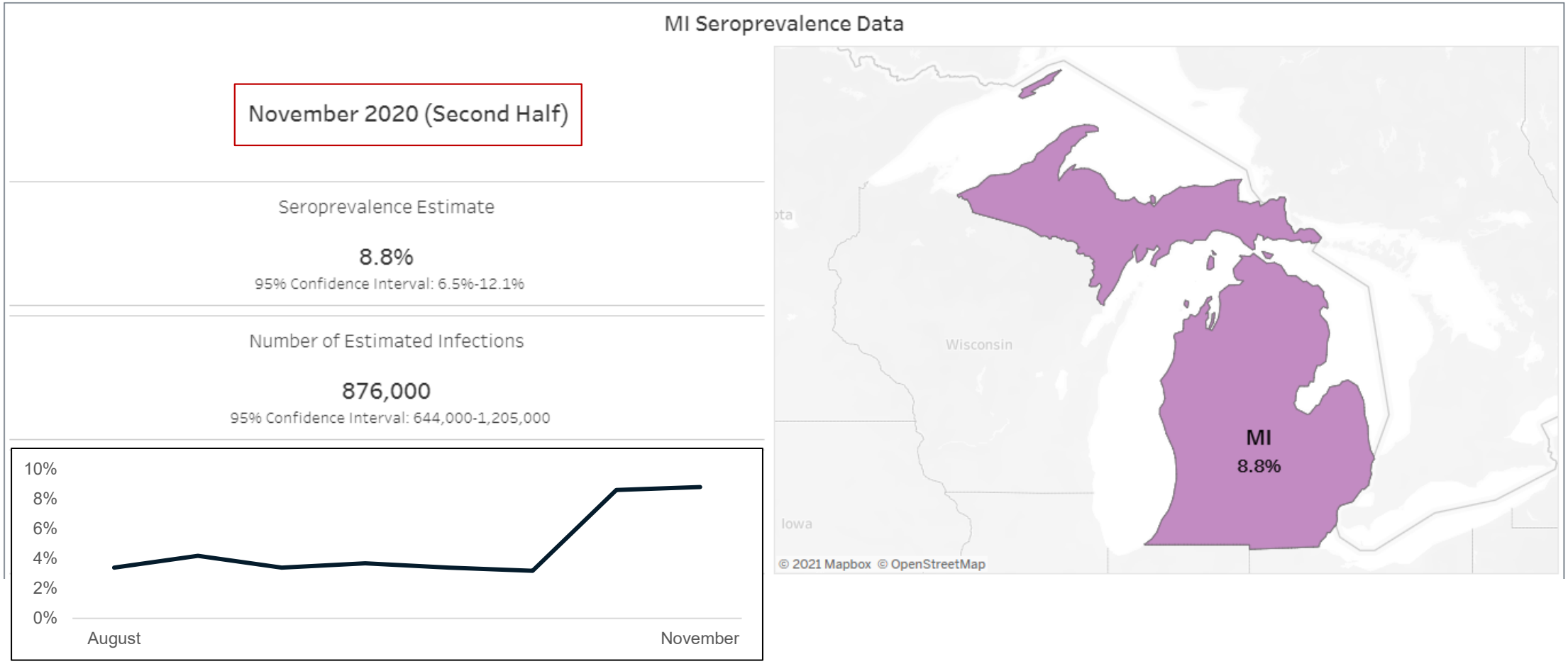
Nationwide Commercial Laboratory Seroprevalence Survey



- The estimated prevalence, or **proportion of individuals who have ever been infected with SARS-CoV-2**, as measured by antibodies in the blood
- Current CDC data through the end of **November 2020**
- Despite the surge of cases in Michigan during the early months of the epidemic, Michigan has faired relatively better than neighboring states

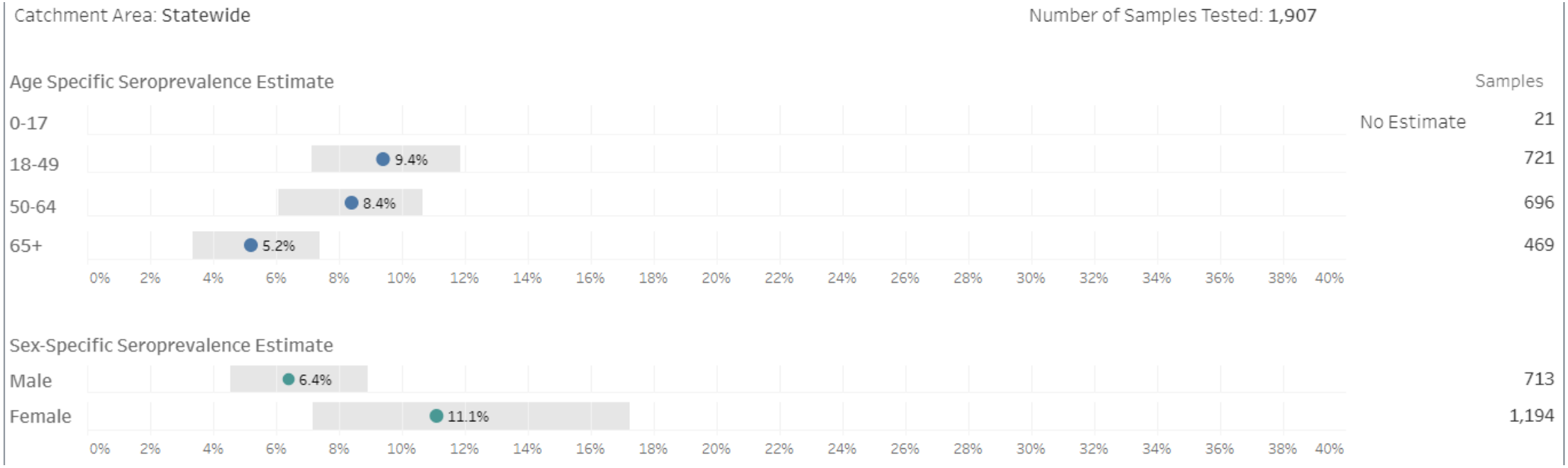
Source: https://covid.cdc.gov/covid-data-tracker/#national-lab

Michigan Commercial Laboratory Seroprevalence Survey



Source: https://covid.cdc.gov/covid-data-tracker/#national-lab

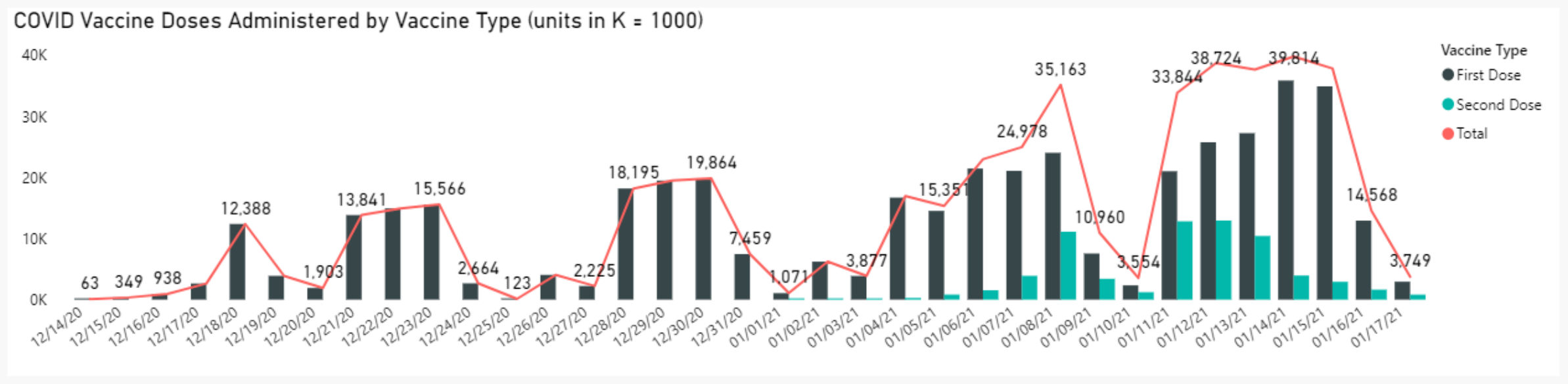
Michigan Commercial Laboratory Seroprevalence Survey – Age and Sex Distributions



Doses Shipped and Administered

Data as of :	17-Jan-21 **Enrolled Providers**	19-Jan-21 **Doses Shipped**	18-Jan-21 **Total Doses Administered**	**1st dose**	**2nd dose**	18-Jan-21 **1st dose Coverage, 16+**
Michigan	**1,615**	**844,125**	**512,906**	**437,027**	**75,879**	**5.4%**
Federal LTC Program		245,100				
Total with LTC Distribution		1,089,225				

Graphic based on 1/18/21



Long Term Care Federal Partnership

Federal Long-Term Care Facility (LTCF) Pharmacy Partnership Program Data as of 1/16/21						
Pharmacy Phase	**Activation Date**	**Facilities Assigned**	**First Clinic Complete**	**% First Clinic Complete**	**Total Vaccines Administered (Residents & Staff)**	**Additional Clinics Scheduled Over Next 7 Days (includes today)**
CVS Part A (Skilled Nursing)	12/28/2020	269	269	100%	23317	0
CVS Part B (Other LTCF)	01/04/2021	717	331	46%	14781	210
Walgreens Part A (Skilled Nursing)	12/28/2020	146	126	86%	11396	22
Walgreens Part B (Other LTCF)	01/04/2021	3852	251	7%	7290	422
Totals		**4984**	**977**		**56784**	**654**

Science Round Up

MDHHS Bureau of Laboratories has identified B.1.1.7 variant in sample from Washtenaw County, expected to be elsewhere in Michigan

- B.1.1.7 Variant is not expected to impact effectiveness of COVID-19 vaccines
- Masking, social distancing and hand washing continue to be crucial
- B.1.1.7 Variant transmits between humans more easily, so case rates may increase

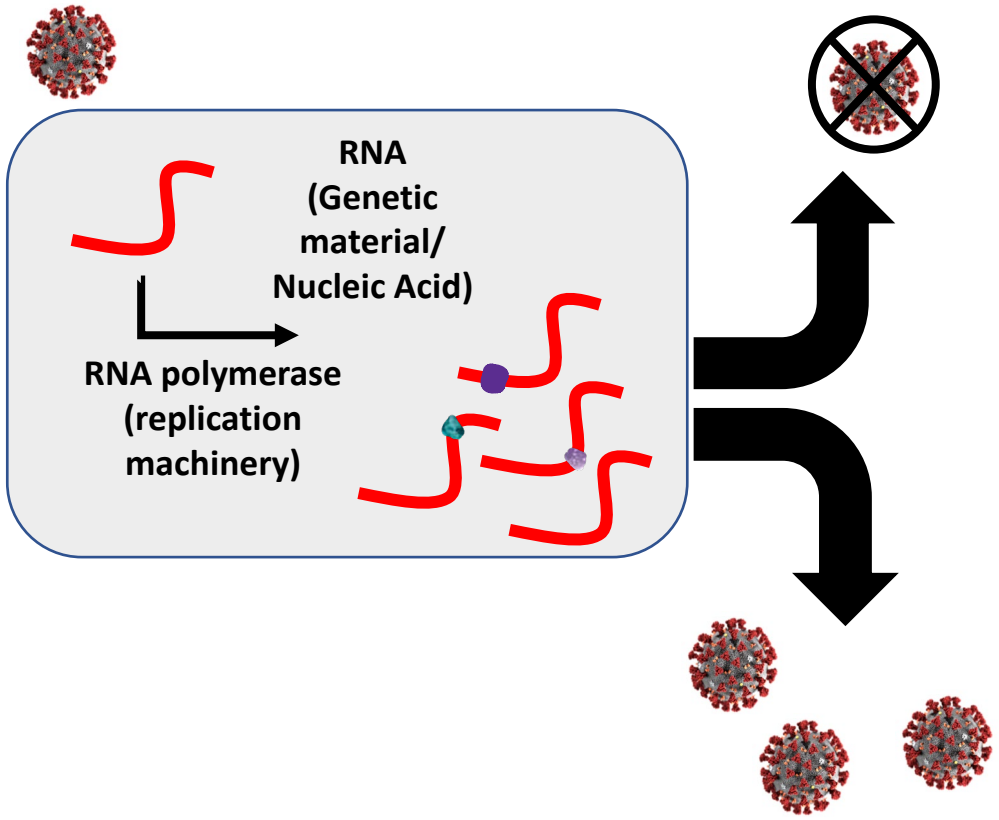
Safely achieving herd immunity through vaccination can reduce or eliminate spread of disease from person to person

- A more transmissible B.1.1.7 variant means a higher herd immunity threshold is likely

Mobility Update

- Most recent data shows some return toward baseline mobility patterns, particularly for non-essential visits

SARS-CoV-2 Genetics

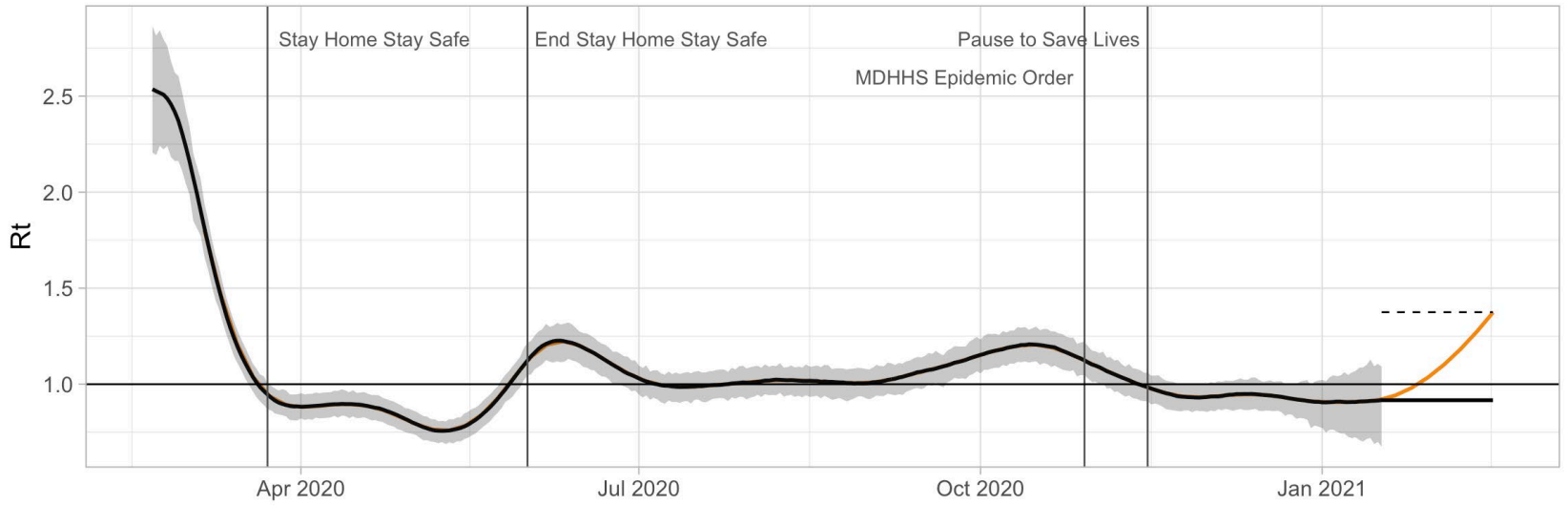


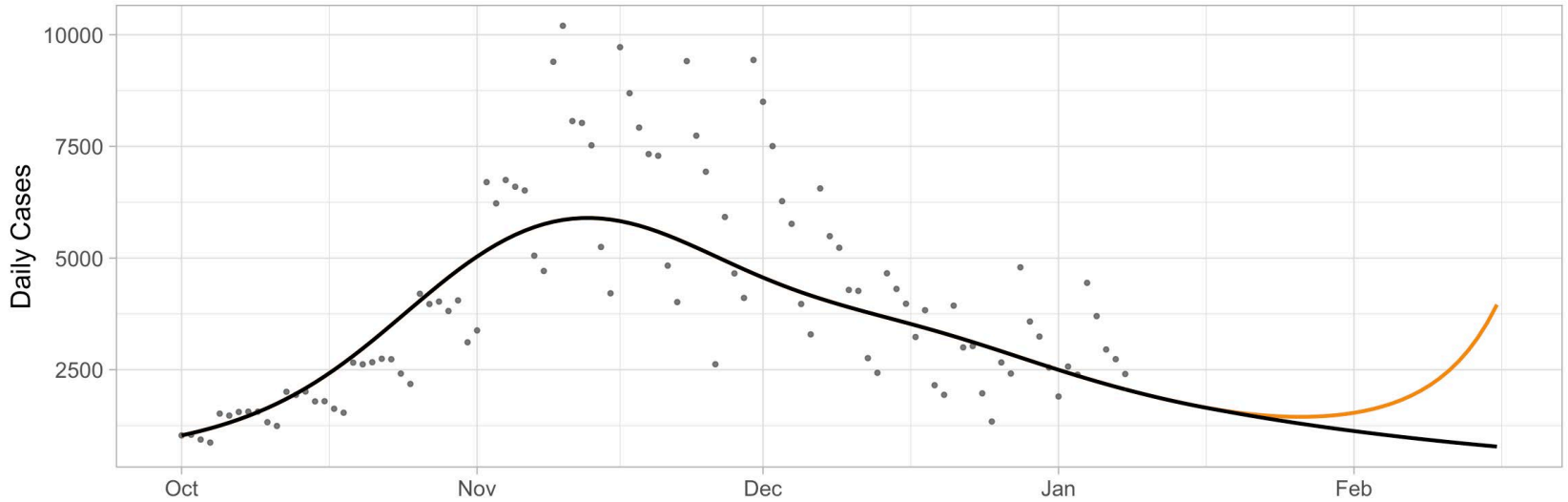
1. RNA tells proteins to form
2. Proteins fold and make things happen in a cell
3. Damaged proteins can be bad for the virus or for the human

- Viruses infect human cells because they lack the ability to replicate themselves in order to survive
- When the virus replicates it can be error prone and introduce mutations
- Most mutations will not affect the virus due to:
  - Minimal change in protein
  - Virus is no longer viable due to damaged proteins

- B1.1.7 variant first identified in UK and has now been found in most US states; including Michigan
- The B.1.1.7 variant does **not** give current indication of impacting vaccination or treatment options
  - Does lead to increased ability to transmit between people
- Mitigation strategies of masks, hand washing, distancing are all effective at prevention

Projecting the impact of the B.1.1.7 variant



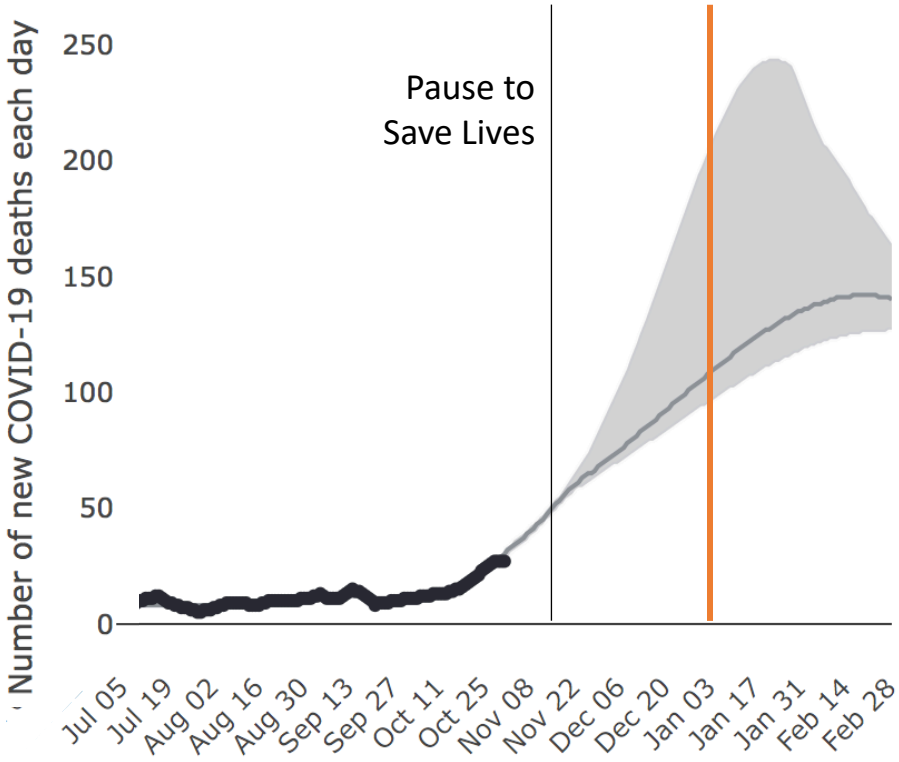


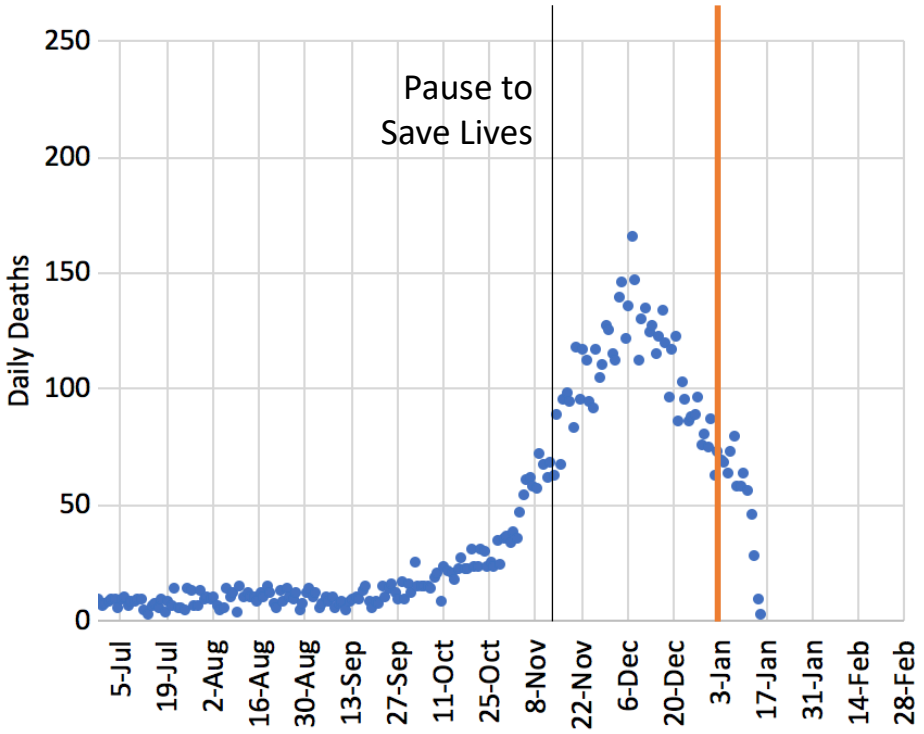
- Rt over time in Michigan—recent data has been ~0.9
- UK data suggests Rt for B.1.1.7 variant is 1.5x higher (dashed line)
- Project impact of B.1.1.7 assuming we move to 1.5x Rt over 1 month (orange)

Data Sources: rt.live, MDSS data, Vöhringer et al.

PUBLIC HEALTH

COVID-SIM projected vs. actual daily deaths





- November COVID-SIM projection (assumes conditions stay the same) vs. actual daily deaths
- Peak projected daily deaths range ~125-250
- Actual peak daily deaths ~150

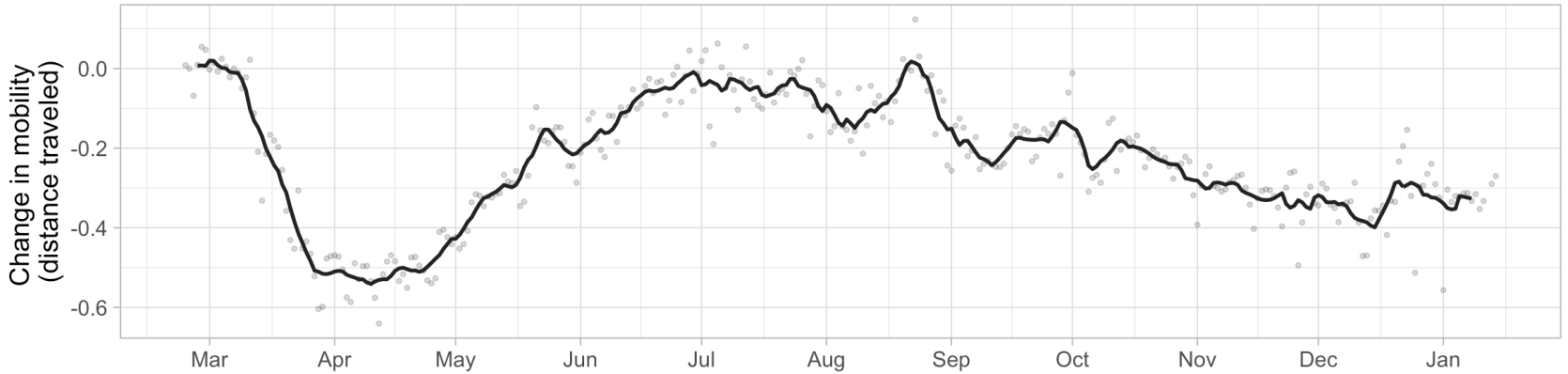
Source: MDSS data, COVID-SIM

Unacast mobility patterns in MI

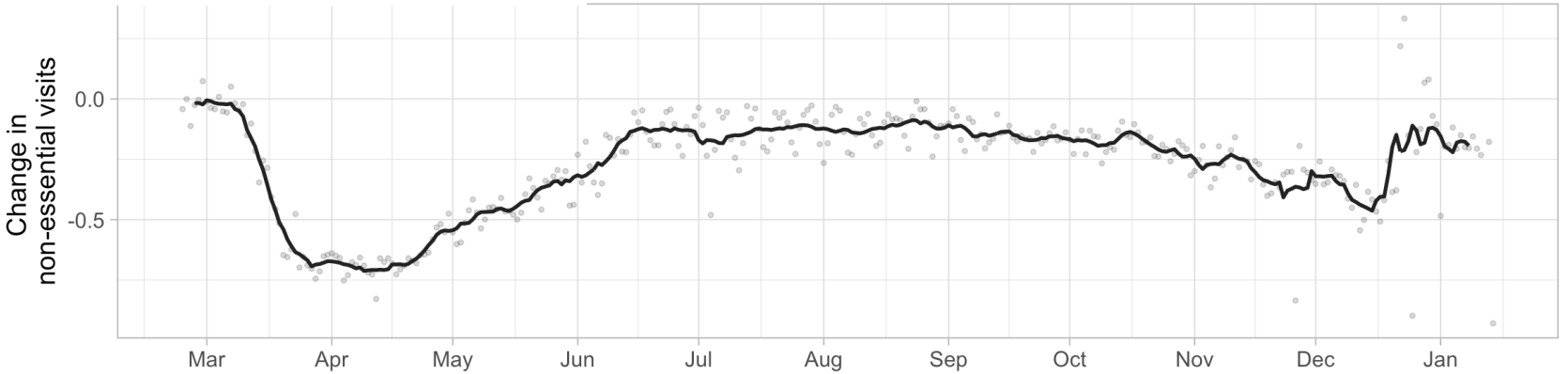
Most recent data shows some return toward baseline mobility patterns, particularly for non-essential visits (data through 1/14/21)

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

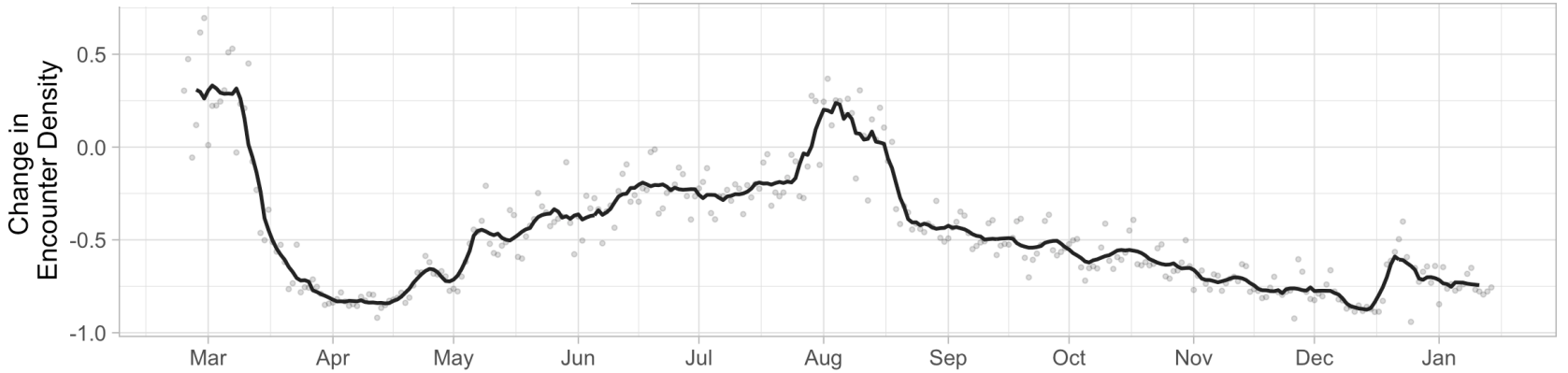
Change in average mobility



Change in non-essential visits



Difference in encounter density



QUESTIONS?

Michigan.gov/Coronavirus