

MI COVID RESPONSE DATA AND MODELING UPDATE

NOTE: All data as of March 6 unless otherwise noted

March 9, 2021

Executive summary

Case rates (113.8, ↑22.6) and **percent positivity** (4.1%, ↑0.4%) have increased since the previous week

Michigan has the **12th highest number of cases** (↑4), and **27th highest case rate** (↑15) in the last 7 days (source: CDC COVID Data Tracker)

4.1% of available inpatient beds are filled with COVID patients (↑0.2 %) and trends for COVID hospitalizations are now increasing

Michigan has the **25th highest inpatient bed utilization**, and the **30st highest adult ICU bed utilization** (source: US HHS Protect)

There were **125 deaths** (↓31) between Feb 21 and Feb 27, and **death rate** is 1.8 deaths per million residents (↓0.4)

Michigan has the **20th highest number of deaths** (↑1), and **T38th highest death rate** (↑5) in the last 7 days (source: CDC COVID Data Tracker)

The 7-day average **state testing rate** is 3,071.4 tests/million/day (↓90.1). **Daily diagnostic tests (PCR)** decreased to 30.5K per day (↓0.9K), and the **weekly average for PCR and antigen tests** conducted in Michigan is 41.3K (↓1.5K).

2.7 million **COVID-19 vaccine** doses reported to MDHHS, 21% of Michigan population 16+ has at least one dose

Comparison across states: Summary 3/8/21

What we see today:

- Five states are seeing increasing 1 week case trends ($\geq 10\%$ rise) (down vs. 19 last week)
- 23 states (down vs. 28) with significant outbreaks (high/increasing cases, increasing/high positivity increasing/high hospitalizations over 2 weeks (>100 per M))
- New York (246/M), New Jersey, Georgia, Texas and Missouri have highest per capita hospitalized patient numbers
- Midwest (case data from CDC):
 - Wisconsin showing drop in hospitalizations (43/M) and decrease in cases (74/M)
 - Indiana with decline in hospitalizations (97/M), and drop in cases (83/M)
 - Illinois showing decline in hospitalizations (90/M), drop in cases (90/M)
 - Ohio with declining hospitalizations (70/M) and drop in cases (95/M)
 - Michigan showing slight increase in hospitalizations (83/M) and small increase in cases (105/M)

COVID-19 Spread

Statewide positivity has increased to 4.1%, and is either increasing or plateauing in most MERC regions

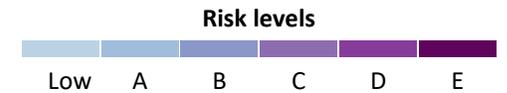
- All eight MERC regions remain below 7% (Risk Level A)
- One region, Upper Peninsula, remains below 3% (Risk Level Low)
- Increasing trends at the state and regional levels are also seen at the county level
- However, most counties (81) have positivity below 10%

Case rates (113.8 cases/million) have also increased in the state (Risk Level D)

- 84% decrease from the mid-November peak but have exceeded early October rates again
- Three MERC regions showing an increase in case rates
- Increases and plateaus are seen among most age groups, races, and ethnicities
- In the past 30 days, about than one of five cases have unknown race and ethnicity
- Variant is in Michigan: increased vigilance in use of masks and social distancing and increase testing
 - 3,037 cases with the B.1.1.7 variant have been identified in the US (↑637), 563 in Michigan (↑131)
 - First B.1.351 case identified in Michigan
- Number of active outbreaks is up 3% from previous week
 - Reported school outbreaks have increased since last week (99 to 121) and in High Schools (50 to 75)

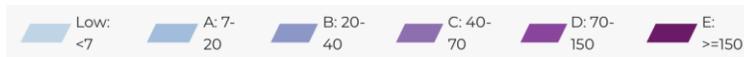
Confirmed and probable case indicators

Table Date: 3/6/2021 (7 days from date table was produced: 2/27/2021)



	Overall Risk Level	Absolute cases (per million)	CDC Case Trend	Average percent positivity	Positivity trend	Tests per million	% inpatient beds occupied by COVID-19 cases	% occupied IP beds trend	Absolute deaths (per million)	Death trend
Detroit	D	113.2	elevated incidence growth	4.1	Increase - 2wk	3027.7	4.2	Increase - 1wk	1.5	Decrease - 10wk
Grand Rapids	D	94.1	decline [56 days]	3.8	Increase - 1wk	2837.1	3.2	Decrease - 14wk	1.8	<20 wkly deaths
Kalamazoo	D	133.1	elevated incidence growth	5.7	Decrease - 1wk	2910.0	4.1	Decrease - 14wk	1.8	<20 wkly deaths
Saginaw	D	130.9	elevated incidence growth	4.8	Increase - 1wk	2655.4	5.2	Increase - 1wk	3.7	Increase - 1wk
Lansing	D	119.4	elevated incidence plateau	4.7	Decrease - 1wk	2660.6	6.5	Decrease - 5wk	1.7	<20 wkly deaths
Traverse City	D	135.5	elevated incidence plateau	4.4	Increase - 2wk	2272.1	3.0	Increase - 1wk	2.3	<20 wkly deaths
Jackson	D	137.1	elevated incidence plateau	4.4	Decrease - 8wk	3640.0	5.0	Decrease - 8wk	3.8	<20 wkly deaths
Upper Peninsula	C	62.1	decline [55 days]	1.5	Decrease - 2wk	3167.0	1.1	Increase - 1wk	0.9	<20 wkly deaths
Michigan	D	113.8	elevated incidence growth	4.1	Increase - 2wk	3071.4	4.1	Decrease - 13wk	1.8	Decrease - 11wk

Cases

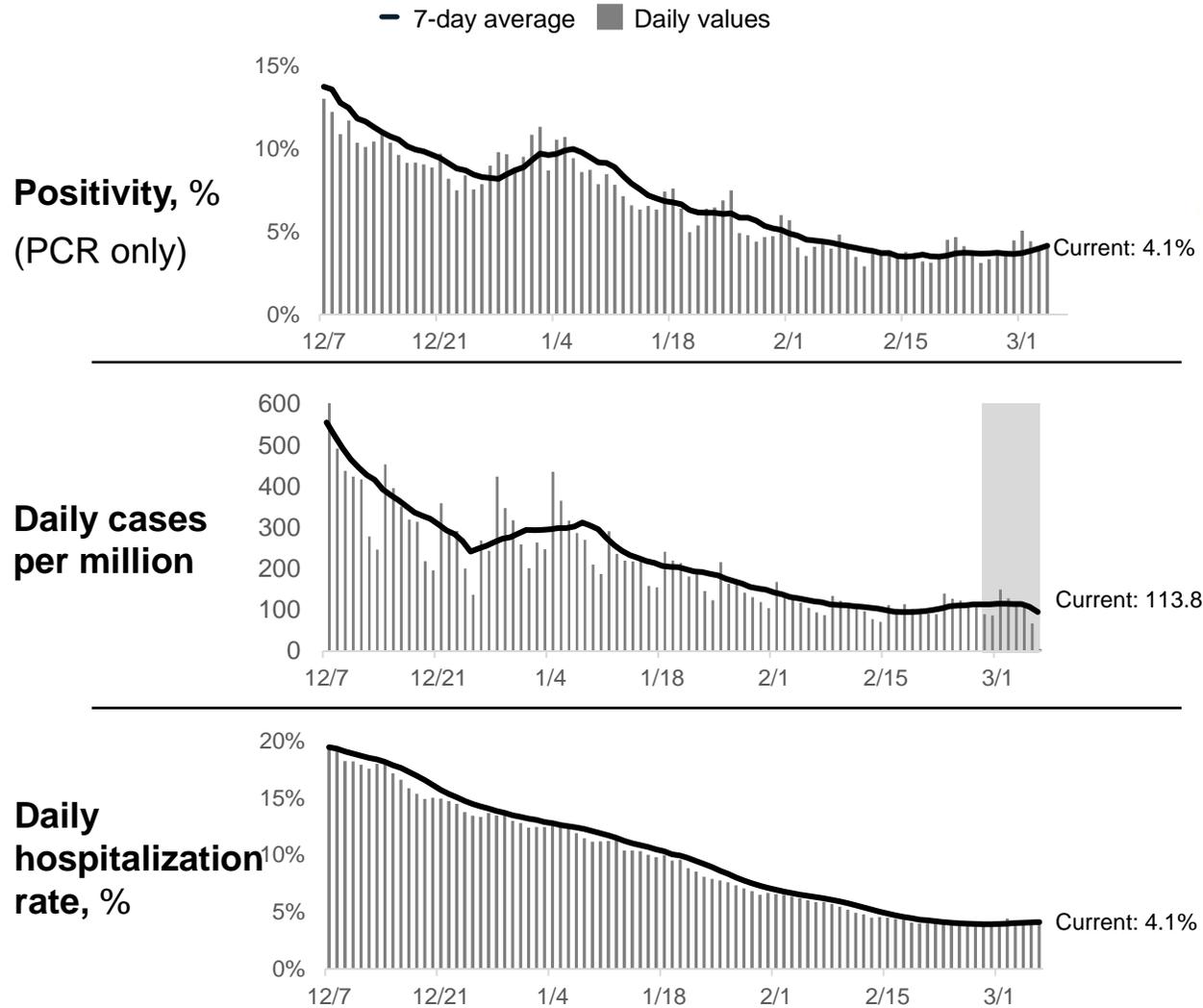


Positivity

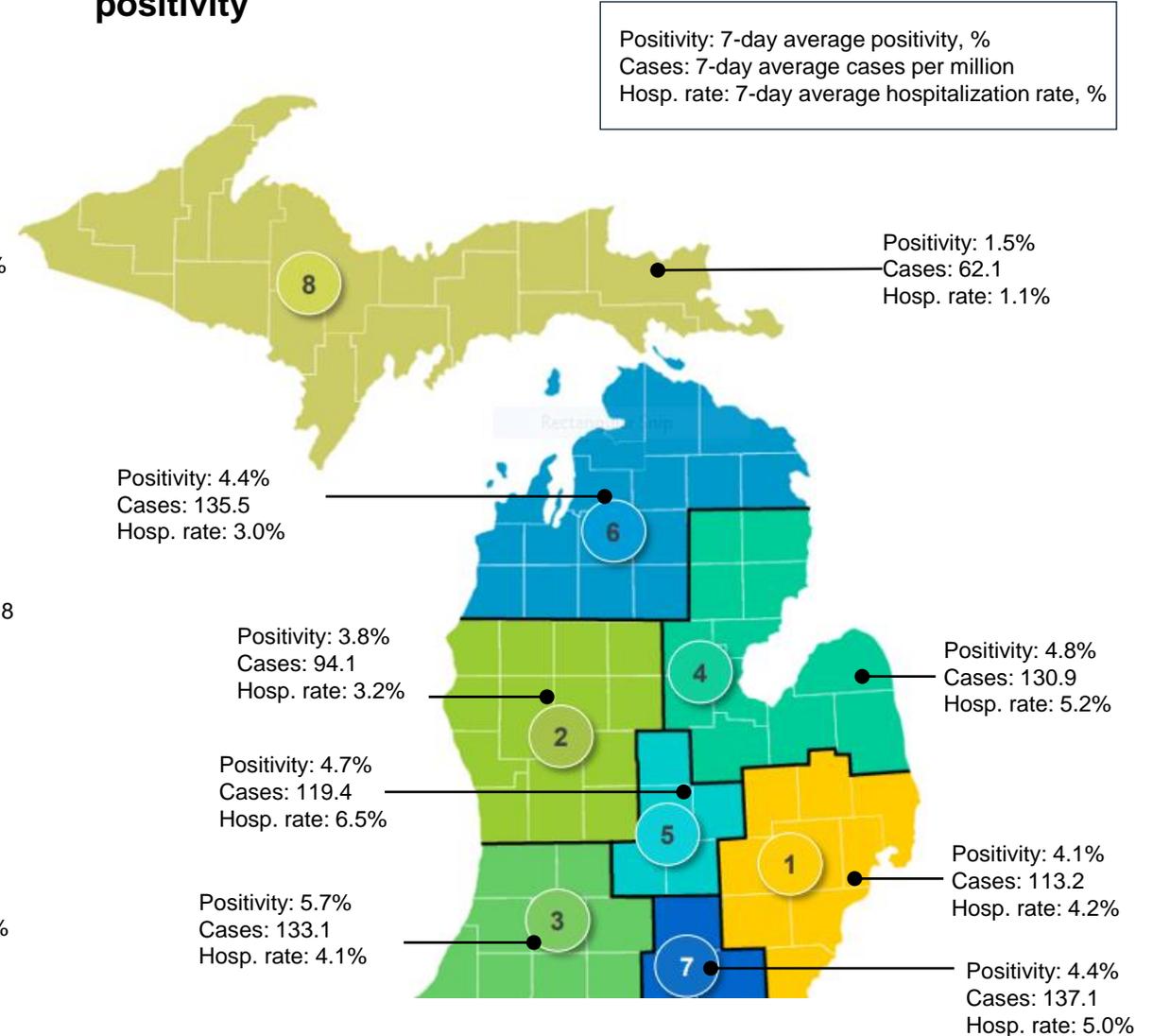


Recent statewide trends

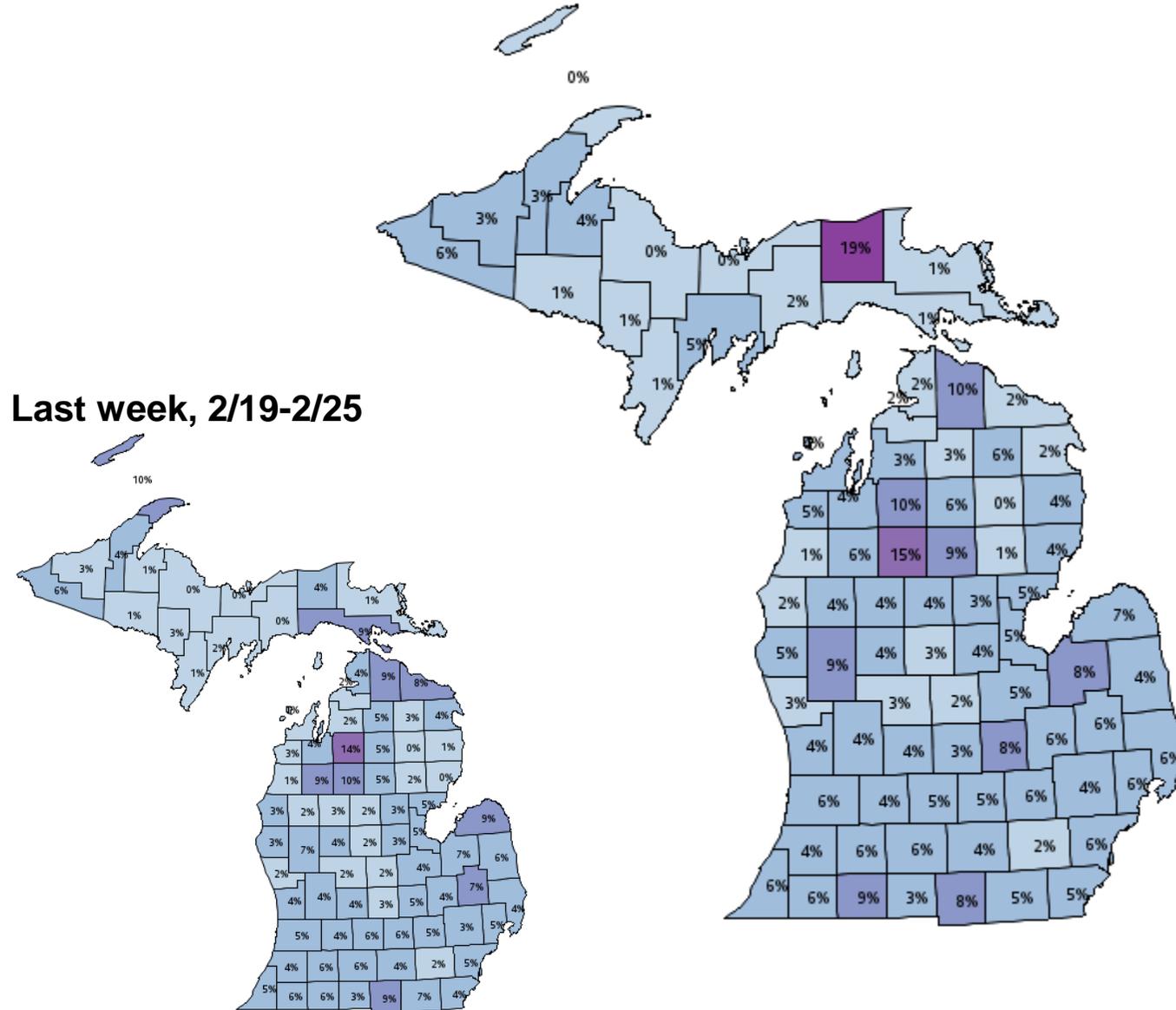
Statewide trends



Regional breakdown: Cases, hospitalization rate, and positivity



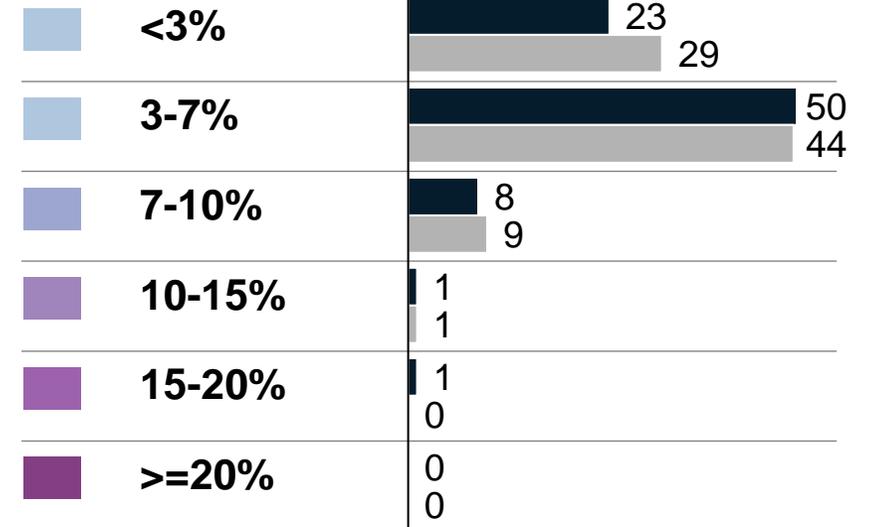
Positivity by county, 2/26-3/4



Average positivity per day

of counties

■ This week
■ Last week



Updates since last week:

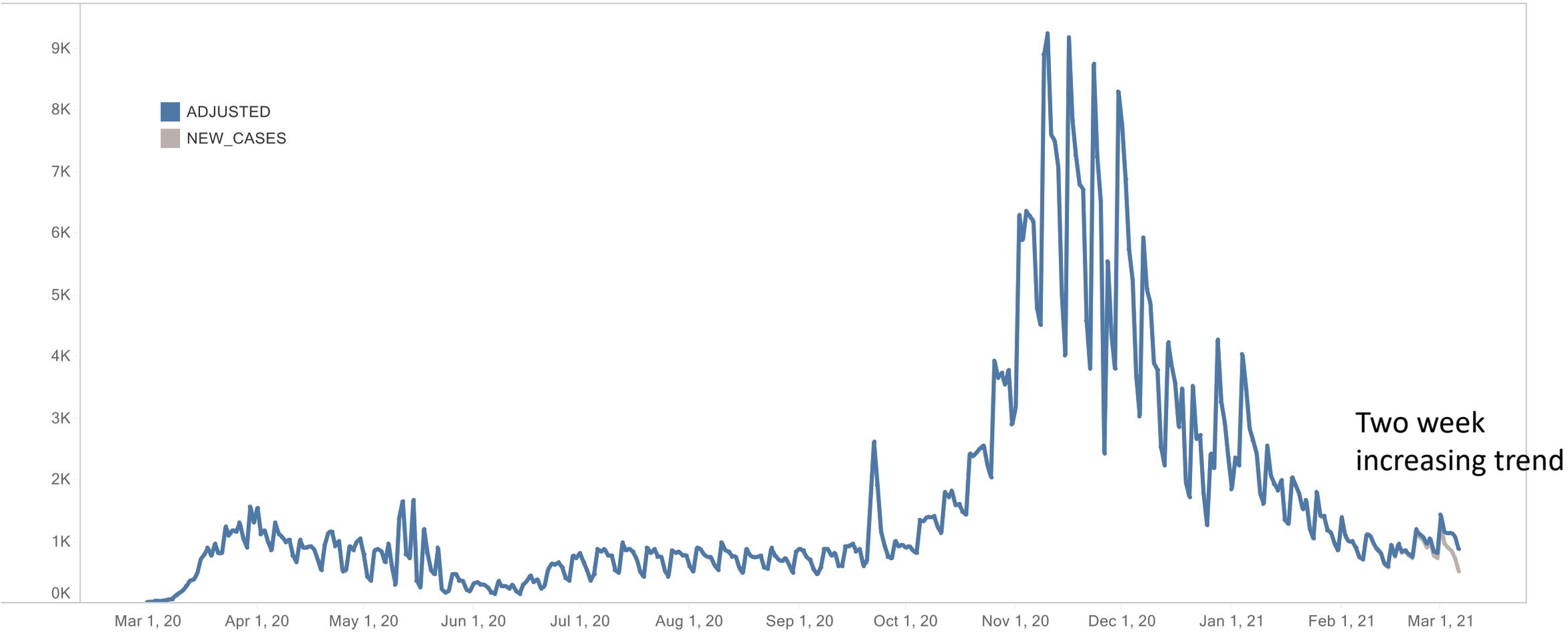
2 of 83 counties saw double digit positivity in the last week (1 county increase)

10 of 83 counties saw positivity > 7% in the last week (same as last week)

60 of 83 counties saw positivity > 3% in the last week (6 county increase)

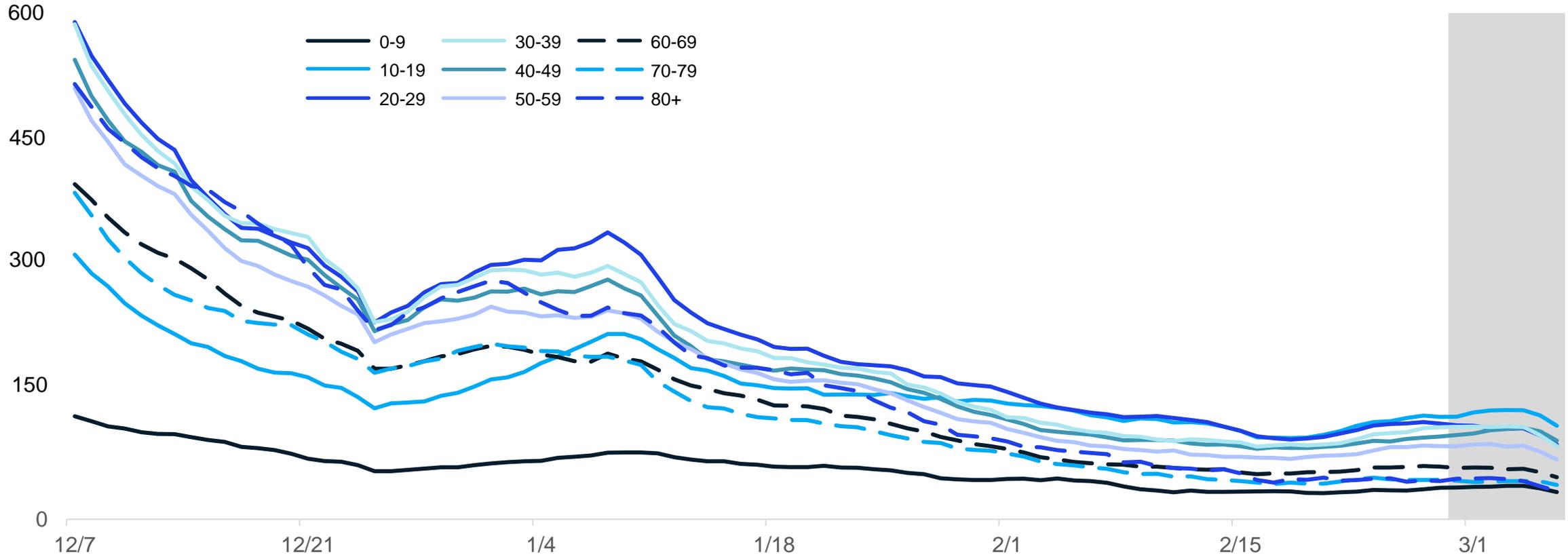
Daily new lag-adjusted COVID cases by onset date

New confirmed cases by onset actual and adjusted as of March 8, 2021 (-2 days)



Age group: average new daily cases

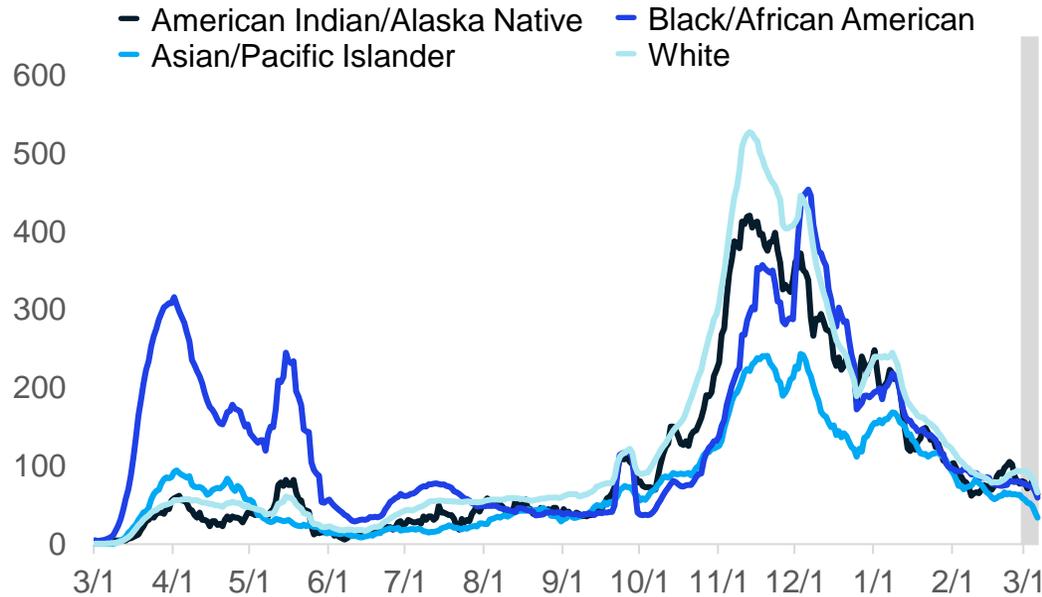
Daily new confirmed and probable cases per million by age group (7-day rolling average)



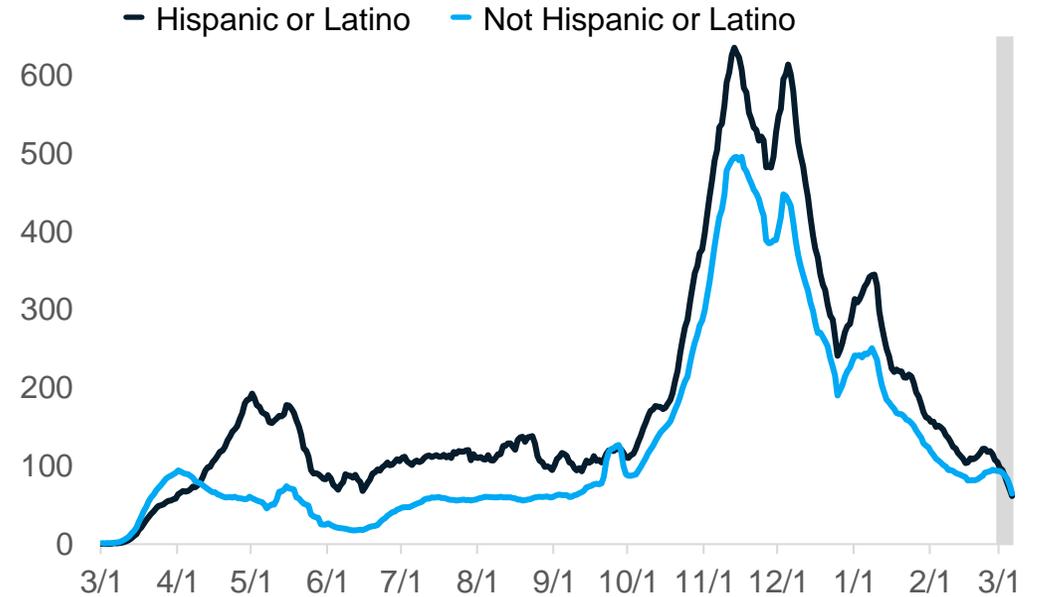
- Age groups by decade are either plateauing or increasing
- Those aged 10-19 and 20-29 are the two highest groups
- In the past week, increases in case rates are highest among 10-19 and 20-29 year olds

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



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

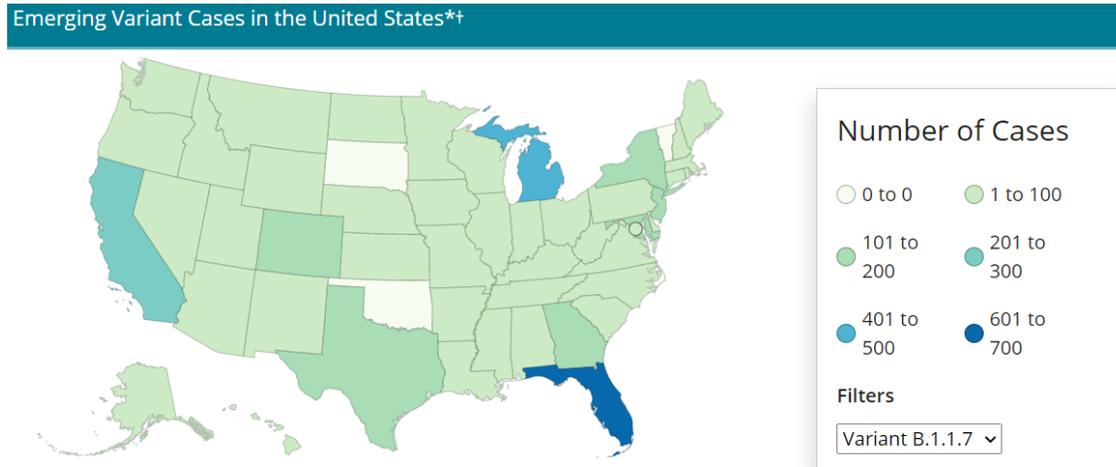


Updates since last week:

- Cases per million are plateaued or increasing for all racial groups, as well as both Hispanic/Latinos and non-Hispanic/Latinos
- In the past 30 days, 23% of all cases represent unknown, multiple, or other races (15% of race is unknown, $\uparrow 1\%$)
- In the past 30 days, 19% of all cases have an unknown ethnicity reported ($\downarrow 1\%$)

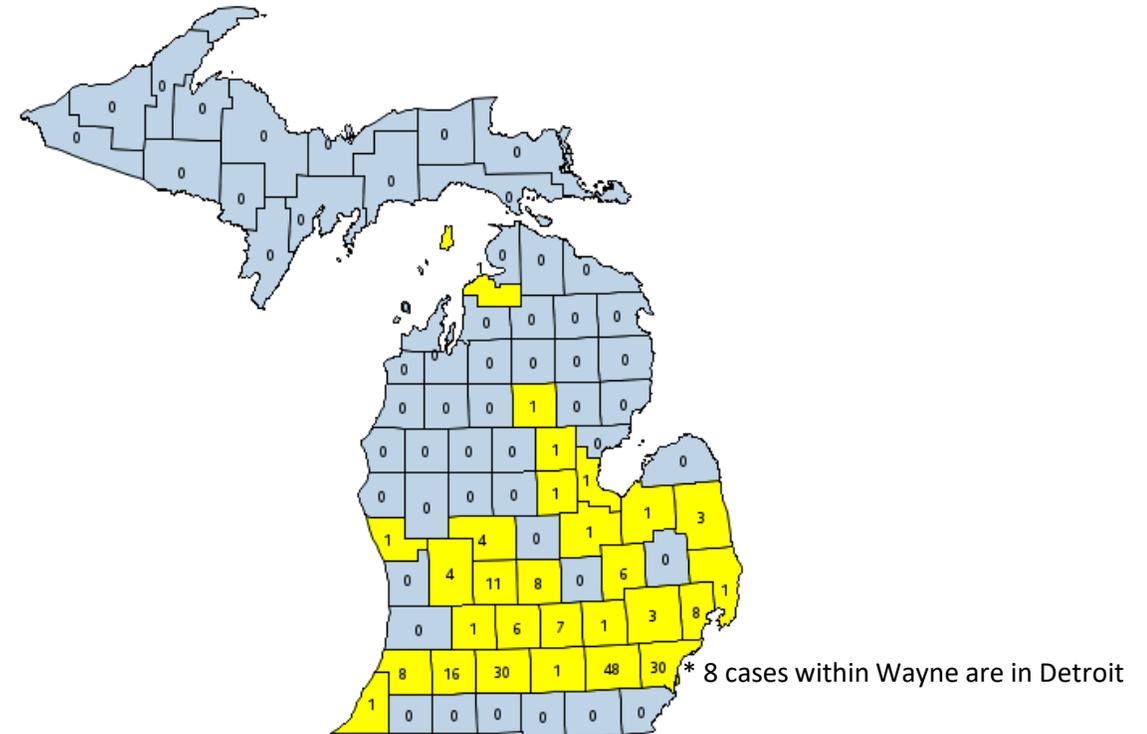
Identified COVID-19 Cases Caused by All Variants of Concern in US and Michigan

Emergent B.1.1.7 Variant Cases in the United States



Variant	Reported Cases in US	Number of Jurisdictions Reporting
B.1.1.7	3037	49
B.1.351	81	20
P.1	15	9

Emergent Variant Cases in Michigan



- 563 B.1.1.7 reported cases (19% of all cases nationally)
 - 28 counties
 - 358 cases within MDOC (64% of all cases in MI)
- 1 case reported with B.1.351 variant

Number of outbreak investigations by site type, week ending Mar 4

Pre-decisional, for discussion only Draft

- Easier to identify outbreak
- Harder to identify outbreak

Site type	Outbreaks by ongoing/new classification, #			Total	Visibility ¹
	Ongoing	New			
SNF/LTC/OTHER ASSISTED LIVING	153	14	167	●	
K-12 SCHOOL	74	47	121	●	
MANUFACTURING, CONSTRUCTION	64	27	91	●	
CHILDCARE/YOUTH PROGRAM	16	24	40	●	
HEALTHCARE	25	6	31	●	
*RETAIL	18	10	28	●	
OFFICE SETTING	7	12	19	●	
COLLEGE/UNIVERSITY	19	1	20	●	
CORRECTIONS	11	2	13	●	
*SOCIAL GATHERING	5	6	11	●	
OTHER	8	4	12	●	
AGRICULTURAL/FOOD PROCESSING	10	0	10	●	
*RESTAURANTS AND BARS	4	5	9	●	
*SHELTERS	8	1	9	●	
*RELIGIOUS SERVICES	4	3	7	●	
*PERSONAL SERVICES	1	4	5	●	
*COMMUNITY EXPOSURE - OUTDOOR	0	0	0	●	
*COMMUNITY EXPOSURE - INDOOR	0	0	0	●	
TOTAL	427	166	593		

Total number of active outbreaks is up 3% from previous week

Following K-12 (47), the greatest number of new outbreaks were reported in manufacturing/ construction (27), childcare/youth programs (24), SNF/LTC (14), office setting (12), and retail (10).

LHDs reported new outbreaks in all settings except indoor and outdoor community exposures, and agriculture/ food processing.

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

K-12 school outbreaks, recent and ongoing, week ending Mar 4

Number of reported outbreaks increased since last week (99 to 121) including increases in High Schools (50 to 75), and Administrative (2 to 3). Decreases in reported outbreaks were seen among Middle/Jr High (24 to 21), and Pre K-Elementary (23 to 22).

Region	Number of reported cases, #	# Ongoing - Excluding New	# New	Number of outbreaks	Range of cases per outbreak
Region 1	110	66		25	2-28
Region 2n	24	57		20	2-16
Region 2s	38	49		15	2-19
Region 3	235	25		23	2-49
Region 5	17	48		5	4-24
Region 6	93	28		13	2-30
Region 7	56	43		19	2-10
Region 8	7	0		1	7-7
Total	580	316		121	2-48

Grade level	Number of reported cases, #	# Ongoing - Excluding New	# New	Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	82	38		22	2-24
Jr. high/middle school	108	34		21	2-28
High school	386	242		75	2-49
Administrative	4	2		3	2-2
Total	580	316		121	2-48

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 increasing

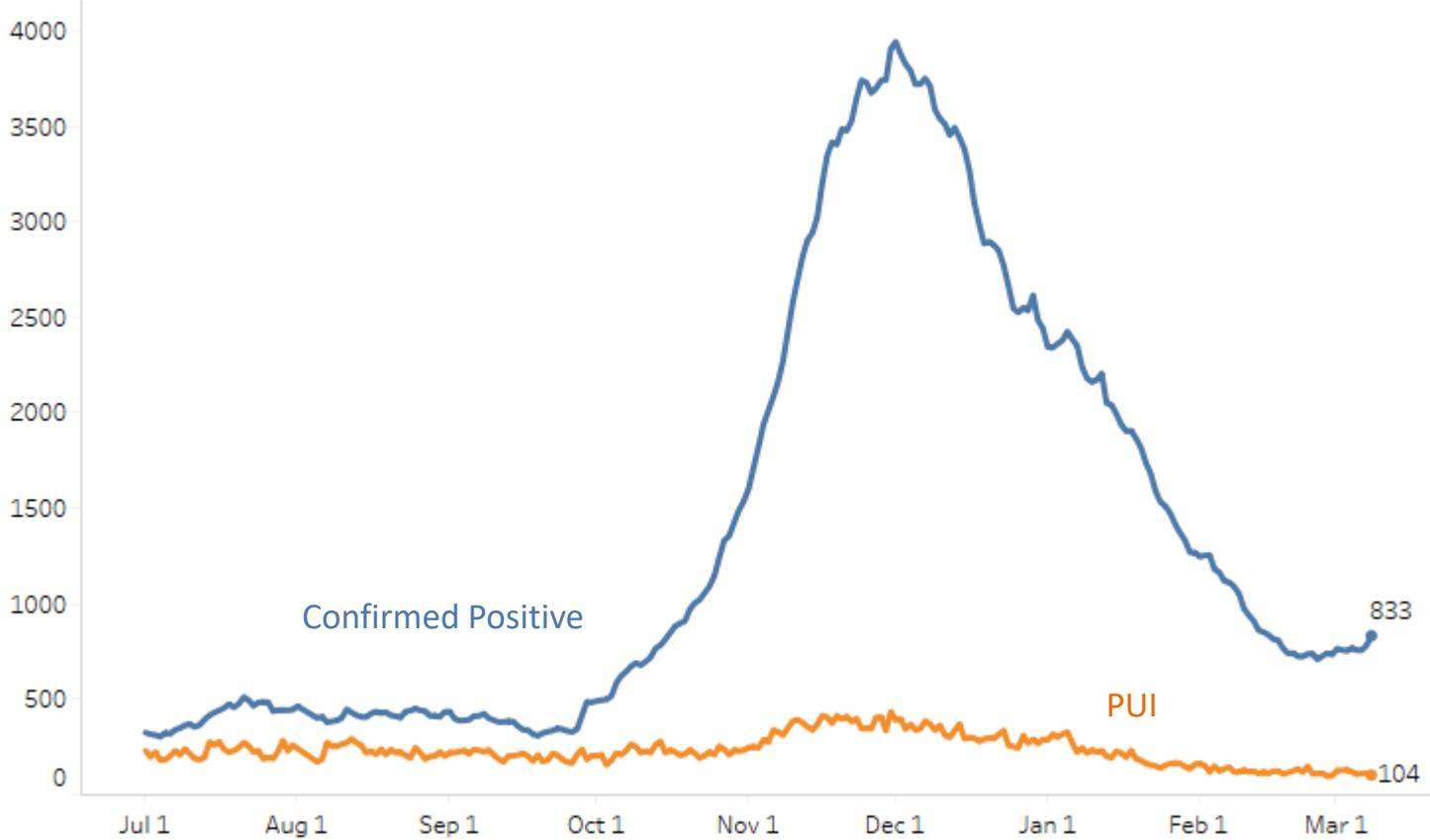
- COVID-like illness (CLI) has plateaued and is below 2% (data in appendix)
- Hospitalizations up 9% since last week (second consecutive week)
- Four regions are showing increasing hospitalization trends this week (regions 2N, 2S, 6, 7)
- The census of COVID+ patients in ICUs has risen statewide and in 3 regions (2N, 3, 7)

Deaths have declined for 11 weeks to 1.8 deaths per million

- Deaths are a lagging indicator of cases and hospitalization
- 87% decrease from the peak on December 10
- Current death rate is nearly 1.5x greater than death rate in early October
- Proportion of deaths among those 60+ is slowly declining

Statewide Hospitalization Trends: Total COVID+ Census

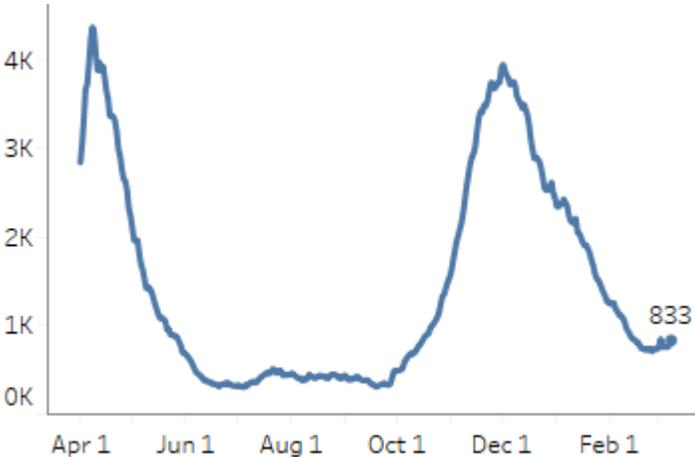
Hospitalization Trends 7/1/2020 – 3/8/2021
Confirmed Positive & Persons Under Investigation (PUI)



COVID+ census in hospitals has increased for the past 2 weeks. This week is up 9% from the previous week.

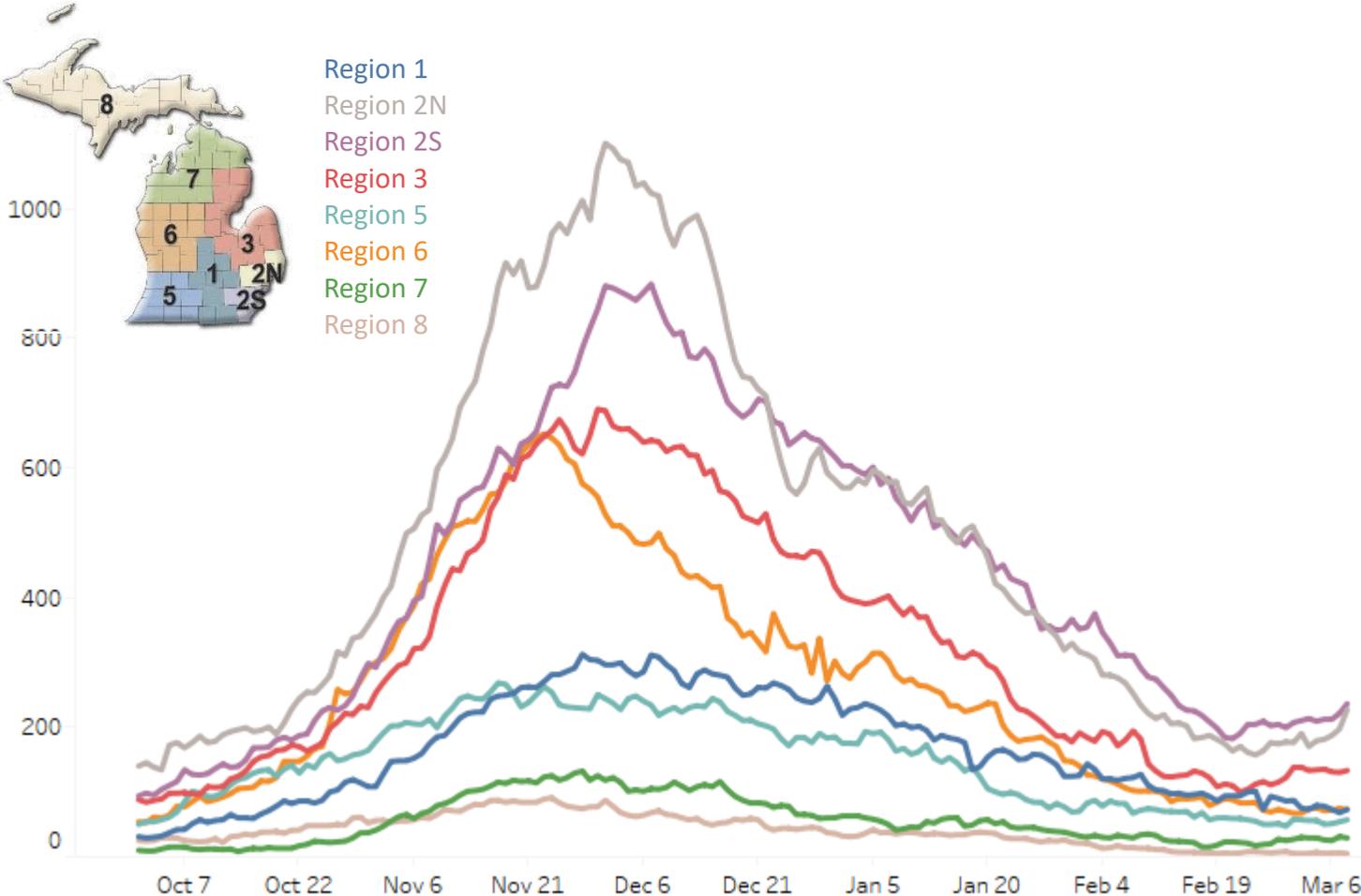
The increase continues to be driven primarily by an increase in new admissions.

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 10/1/2020 – 3/8/2021
Confirmed Positive by Region



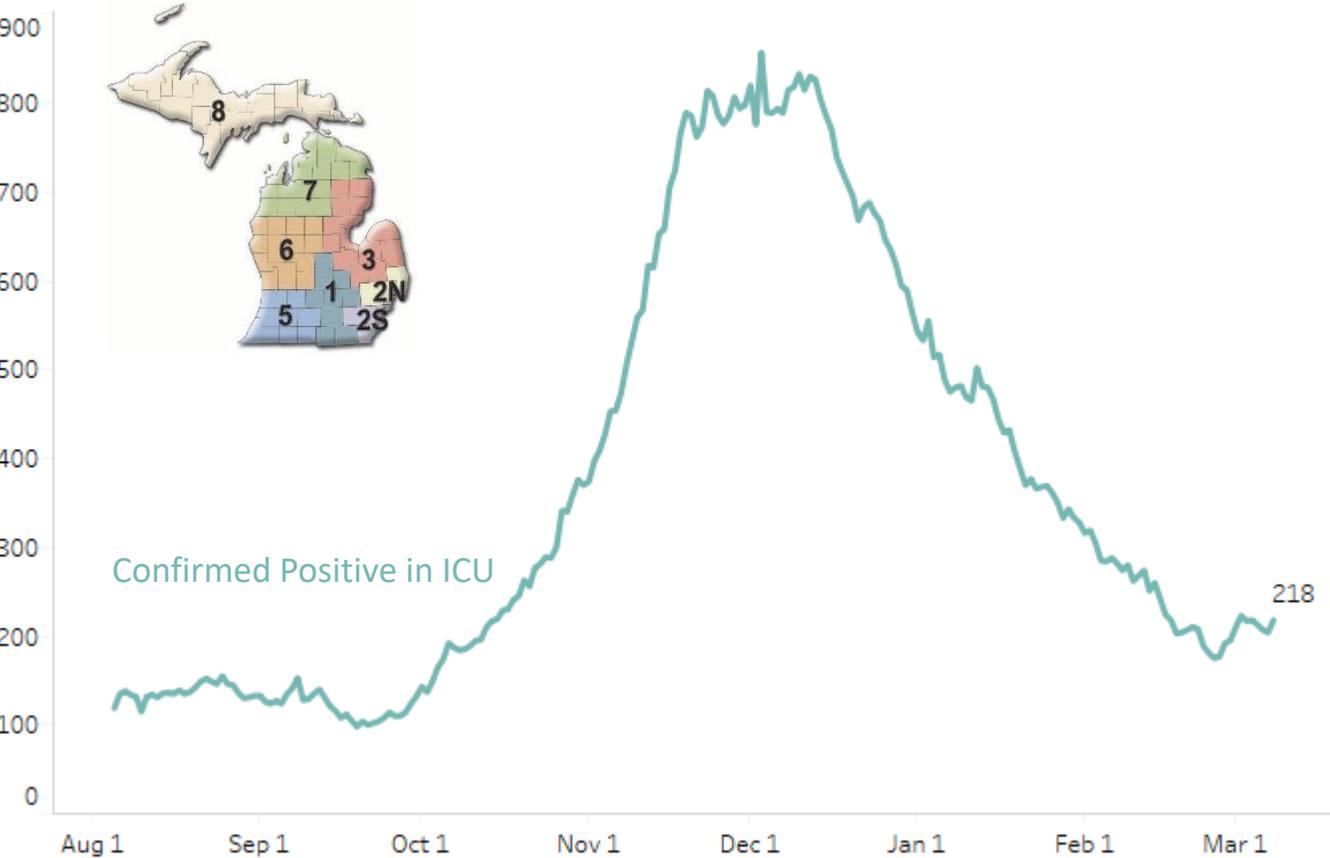
Four regions are showing increasing hospitalization trends this week (regions 2N, 2S, 6 (new), 7)

Three regions (2S, 2N, 3) are now above 100 hospitalized per million of the population.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	73 (-16%)	67/M
Region 2N	227 (+29%)	103/M
Region 2S	236 (+14%)	106/M
Region 3	133 (-4%)	117/M
Region 5	57 (-2%)	60/M
Region 6	73 (+12%)	50/M
Region 7	29 (+7%)	58/M
Region 8	5 (0%)	16/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 8/1/2020 – 3/8/2021
Confirmed Positive in ICUs



The census of COVID+ patients in ICUs have risen in 3 regions (regions 2N, 3, 7). Overall, ICU census has increased 4% from last week statewide.

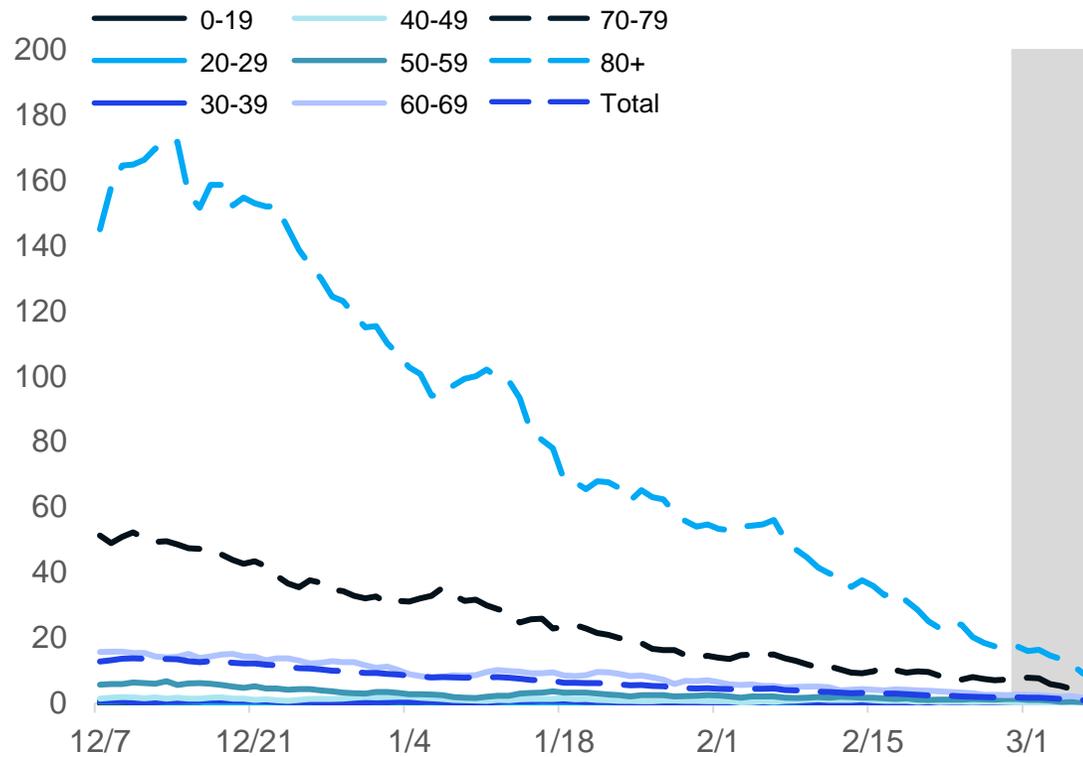
Regions 3 and 5 have >10% of ICU beds occupied by COVID+ patients.

Region	Adult COVID+ in ICU	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	11 (-35%)	86%	6%
Region 2N	52 (+27%)	73%	9%
Region 2S	57 (-7%)	75%	8%
Region 3	41 (+41%)	74%	12%
Region 5	25 (-7%)	83%	17%
Region 6	22 (-21%)	71%	6%
Region 7	9 (+80%)	61%	5%
Region 8	1 (-50%)	60%	2%

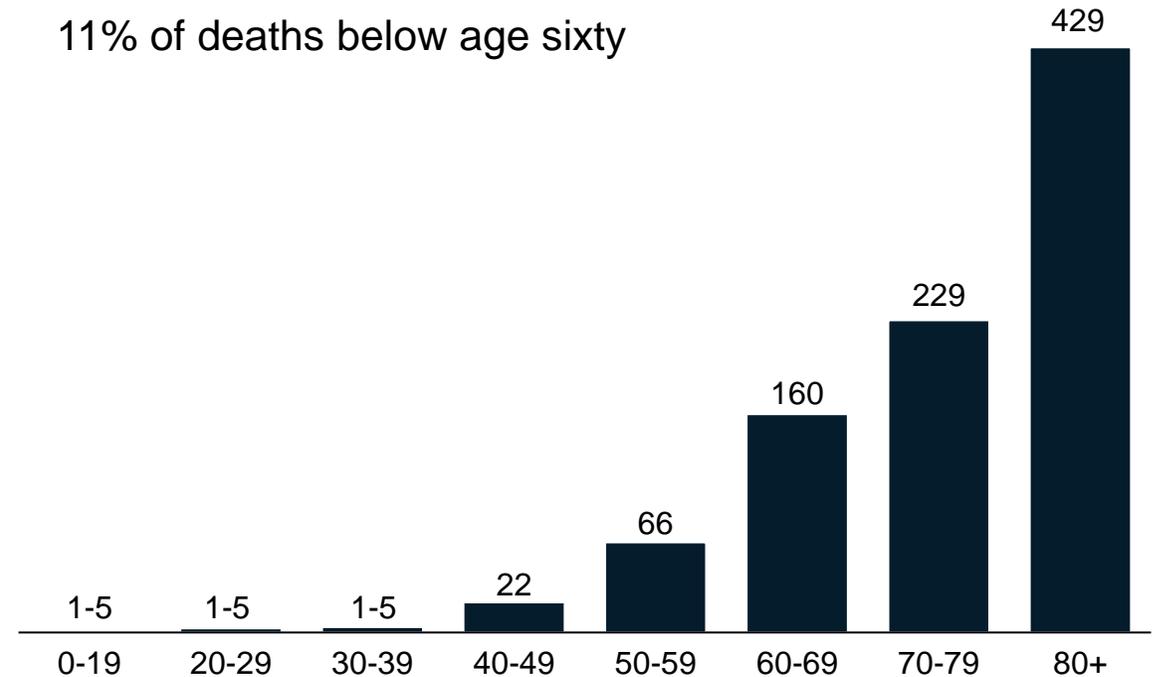
Hospital bed capacity updated as of 3/5

Average and total new deaths, by age group

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



Total confirmed and probable deaths by age group (past 30 days, ending 2/27/2021)

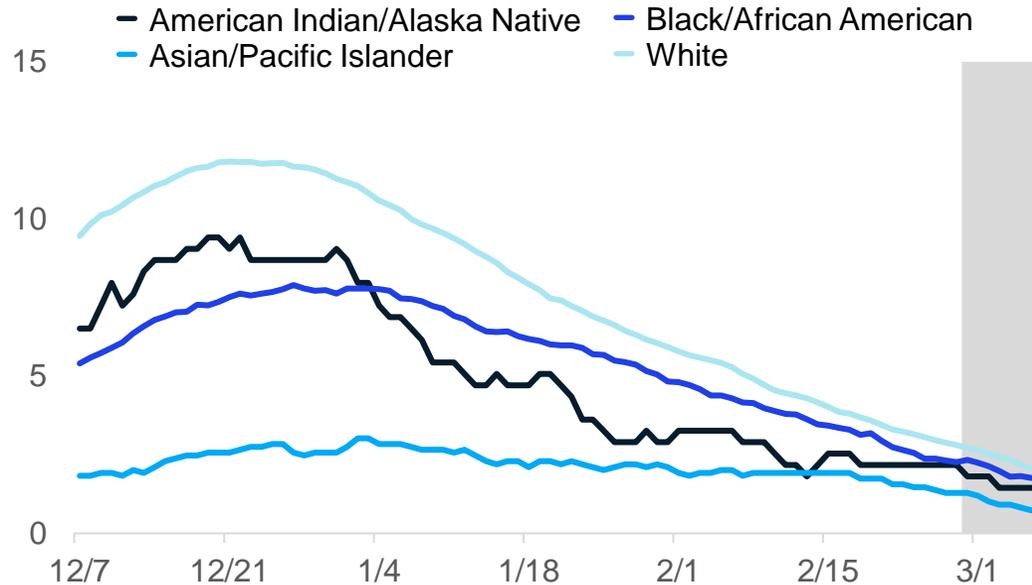


Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.

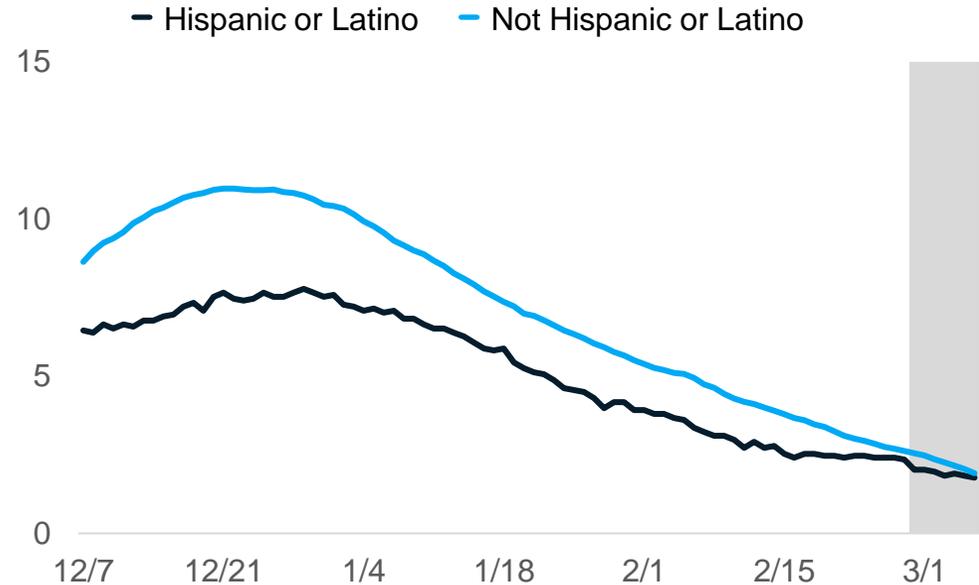
Source: MDHHS – Michigan Disease Surveillance System

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



Updates since last week:

- Deaths are a lagging indicator of cases, and death rates are decreasing among racial and ethnic groups
- Whites and Non-Hispanic/Latino have the most reported deaths per capita
- Deaths are not adjusted for confounders (e.g., age, sex, comorbidities)

How is public health capacity?

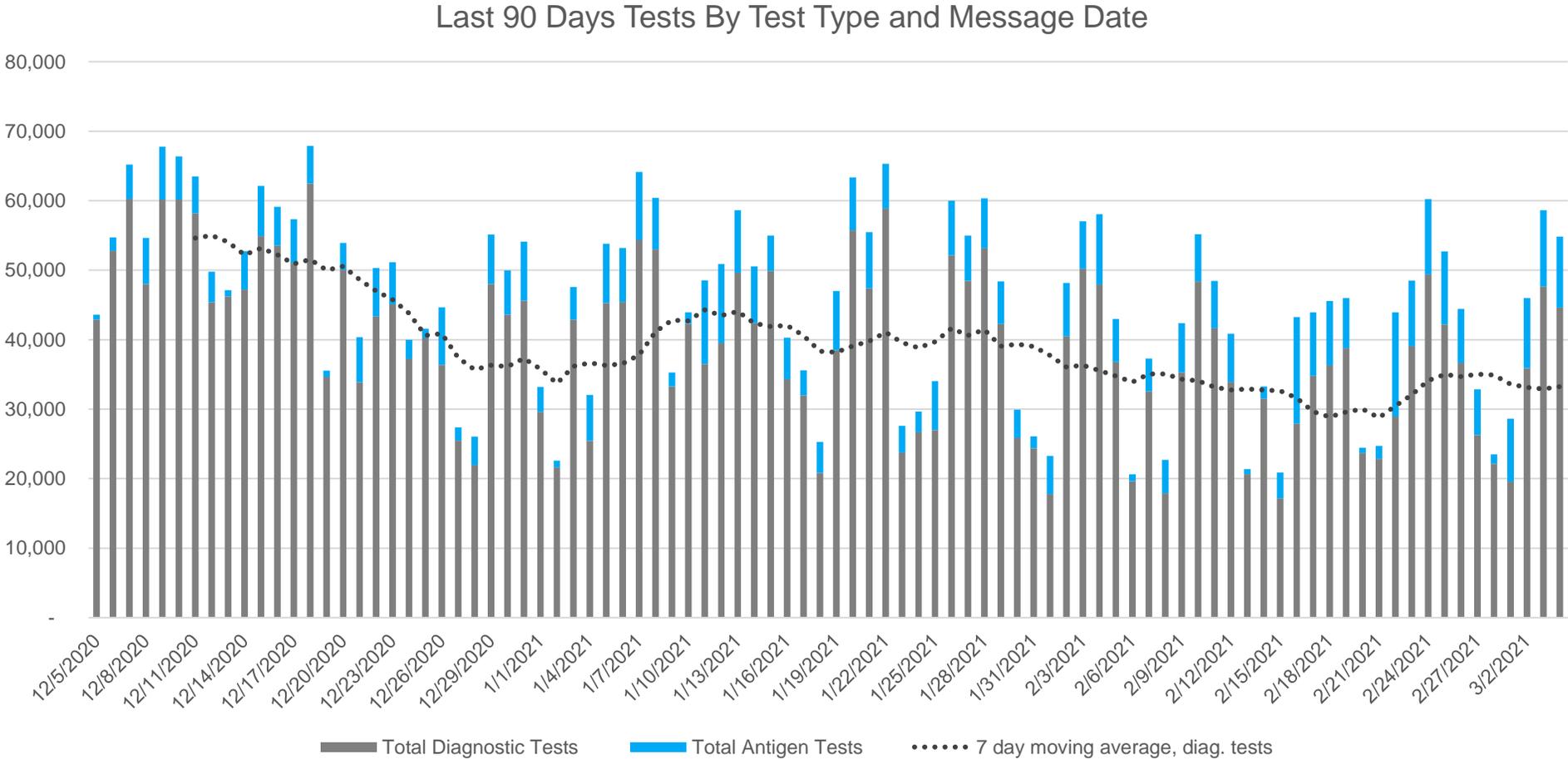
Diagnostic testing volume (PCR and antigen) has decreased from last week to 41,273

- PCR testing has decreased since last week (33,251)
- Percent (19.4%) of antigen tests have increased (8,022)

Cases identified for investigations has increased

- Proportion of completed interviews is steady from since previous week
- Consistent low proportion of cases interviewed with a source of known infection (indicating community acquisition)
- Consistent low proportion of those quarantining when their symptoms begin (indicating no effective halt in community transmission)

Daily diagnostic tests, by message date



Weekly Update

- 41,273 rolling 7-day average daily diagnostic tests reported to MDHHS (PCR + Ag) (↓)
- 33,251 average daily PCR tests (↓)
- 19.4% are antigen tests over the past week (↑)
- 4.1% positivity in PCR tests (↑)
- 2.9% positivity in antigen tests (↑)

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

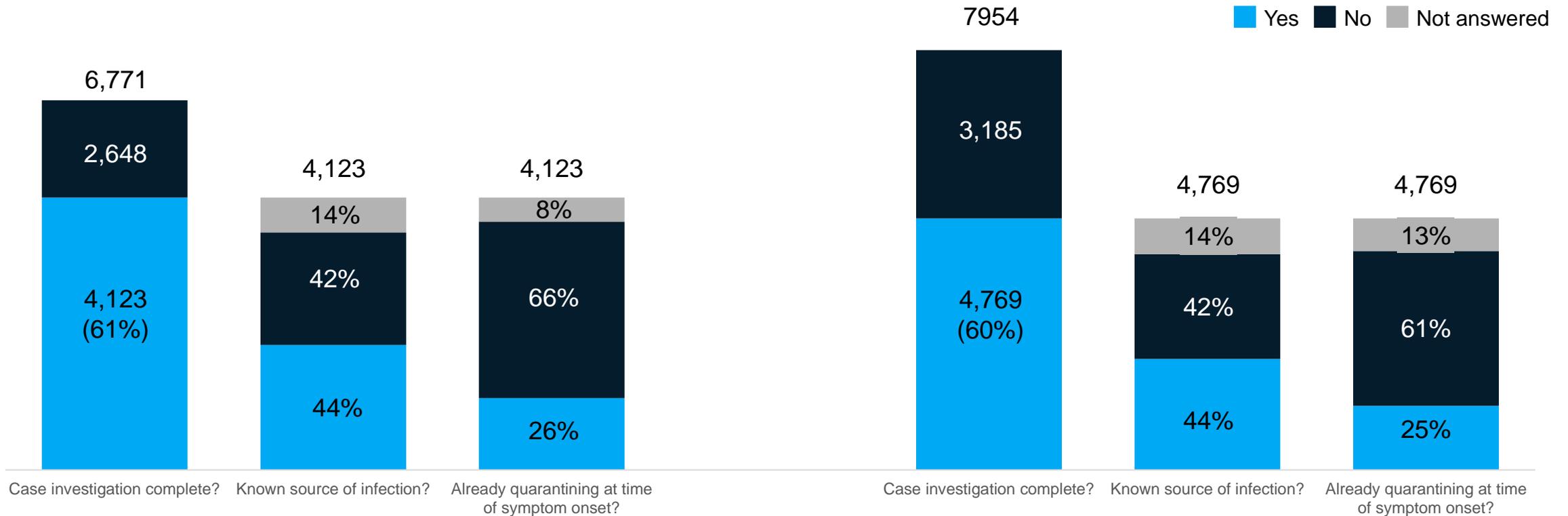
New Case Investigation Metrics (Statewide)

New Communicable Disease metrics slightly increased since last week:

- 44% of investigated cases having a known source (44% last week, 42% week prior)
- 25% of investigated cases noting that they were quarantining before symptoms (26% last week)

02/20-02/26 Case report form information

02/27-03/05 Case report form information



COVID-19 Vaccination

29th in nation for doses administered per 100,000 people

More than 2.6 million doses reported to MDHHS

21.2% of aged 16+ years have first dose of vaccine (up from 18% last week)

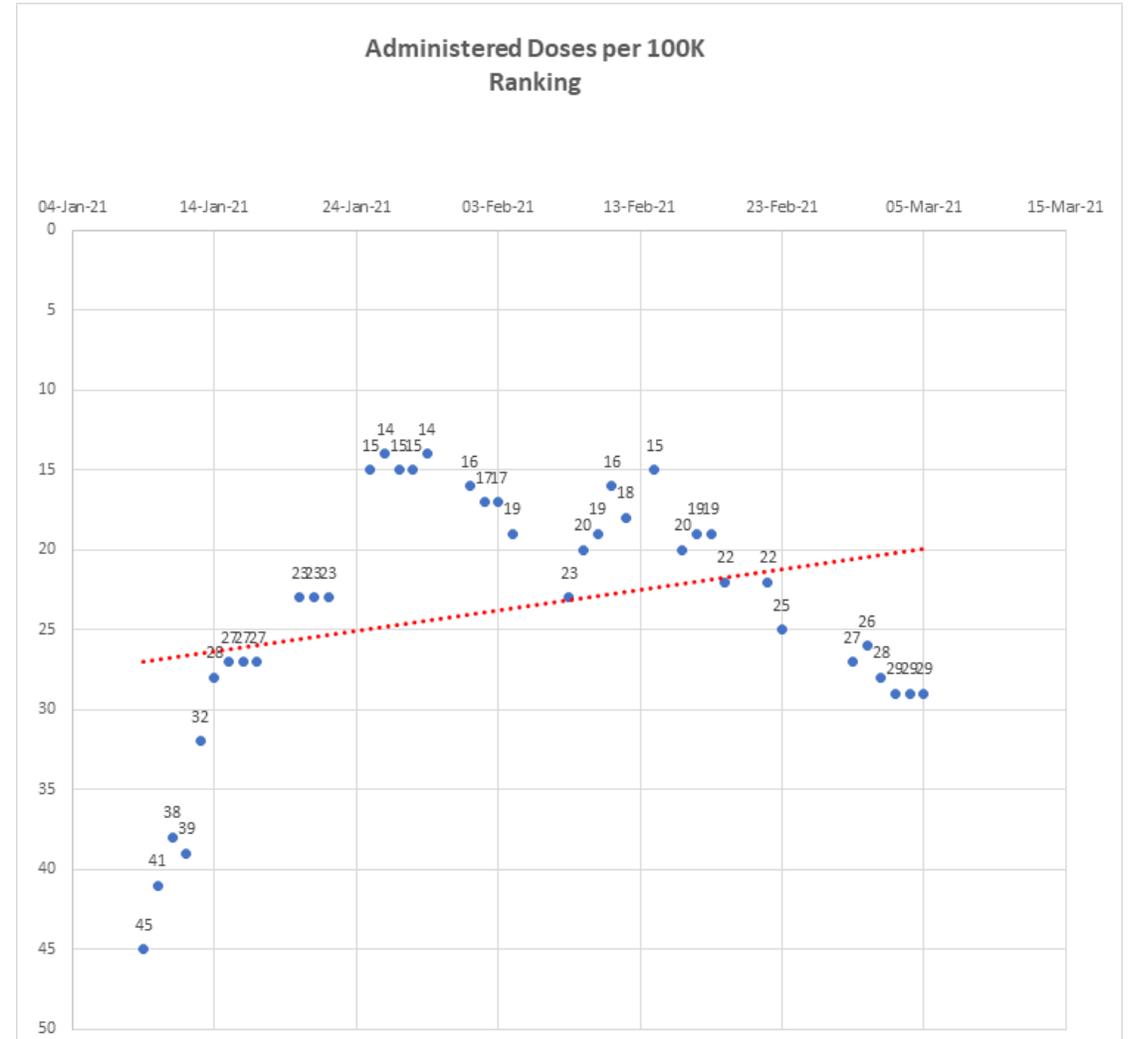
- **963,354 people fully vaccinated**
- 55.2% of people over 65 years have had one dose; 26.5% have completed series

Race data slowly becoming more complete: 35.6 missing race information (down from 38.7%)

- Coverage was highest among those of White Race (13.1% initiation)

Michigan COVID Vaccine Distribution & Administration as of 3/5/2021

	State Rank (Prior)
Total Distributed (Number)	10 (10)
Total Administered (Number)	9 (9)
Administered per 100K*	29 (26)
People with One+ Doses (Number)	9 (9)
% People with One+ Doses	34 (31)
People with Two Doses (Number)	9 (8)
% People with Two Doses	18 (15)



Doses Shipped and Administered

21.1% of Michigan residents have initiated their COVID vaccination series and 11.9% have completed their series.

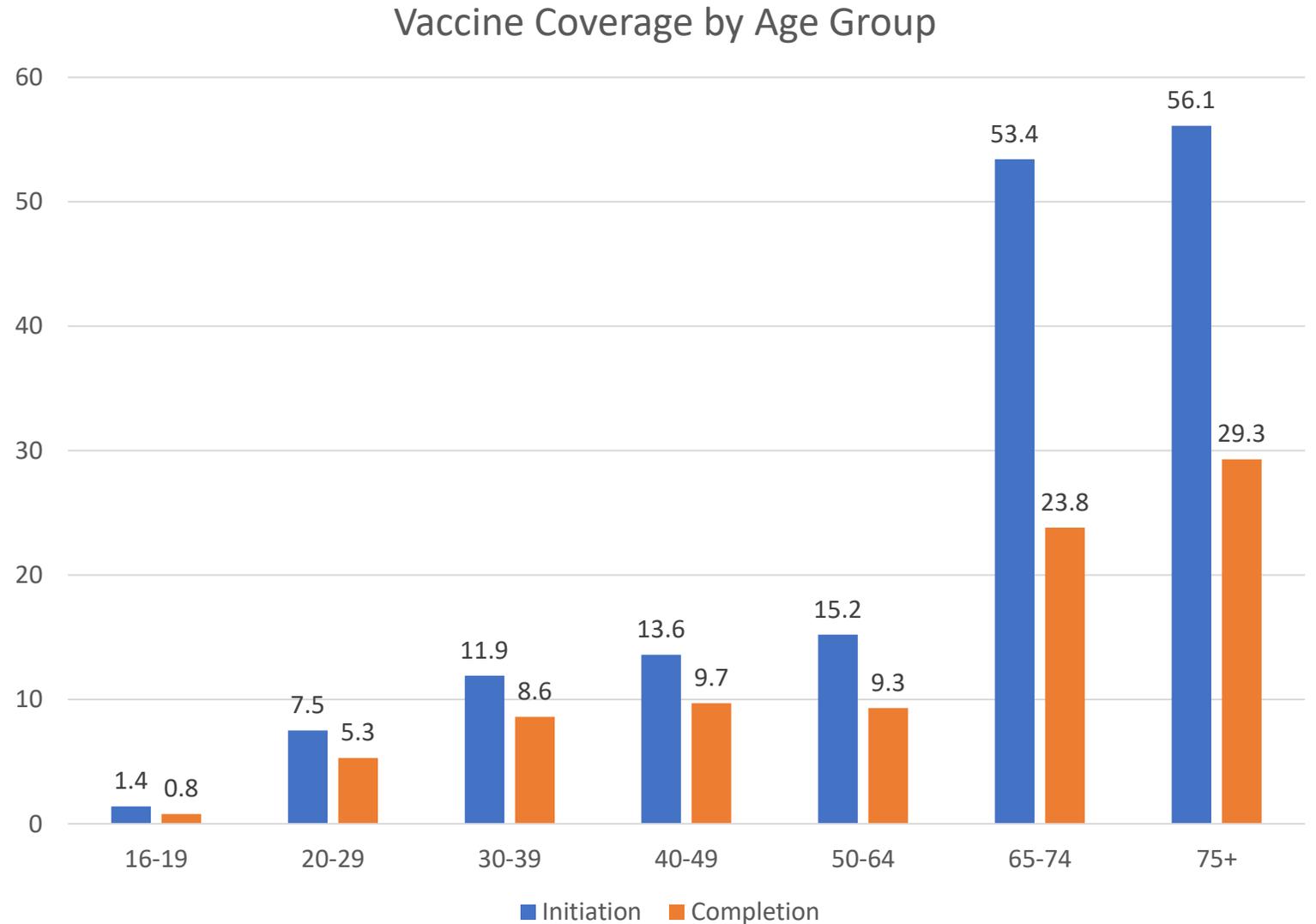
	Doses Shipped	Total Doses Administered		1 st Dose Coverage, 16+	2 nd Dose Coverage, 16+	
Data as of	3/9/21	3/8/21	1 st Dose	2 nd Dose	3/8/21	3/8/21
Michigan Distributed	2,952,255	2,689,248	1,725,894	963,354	21.2	11.9
Federal Programs	420,660					
Total Distribution	3,372,915					

2 weeks administering more than 350,000 doses/week
Over 80,000 doses administered in a single day

Vaccination by Age Group (3/8/21 data)

More than 974,086 people aged 65 years or older have received one or more doses of vaccine (up 20% from 810,646 last week).

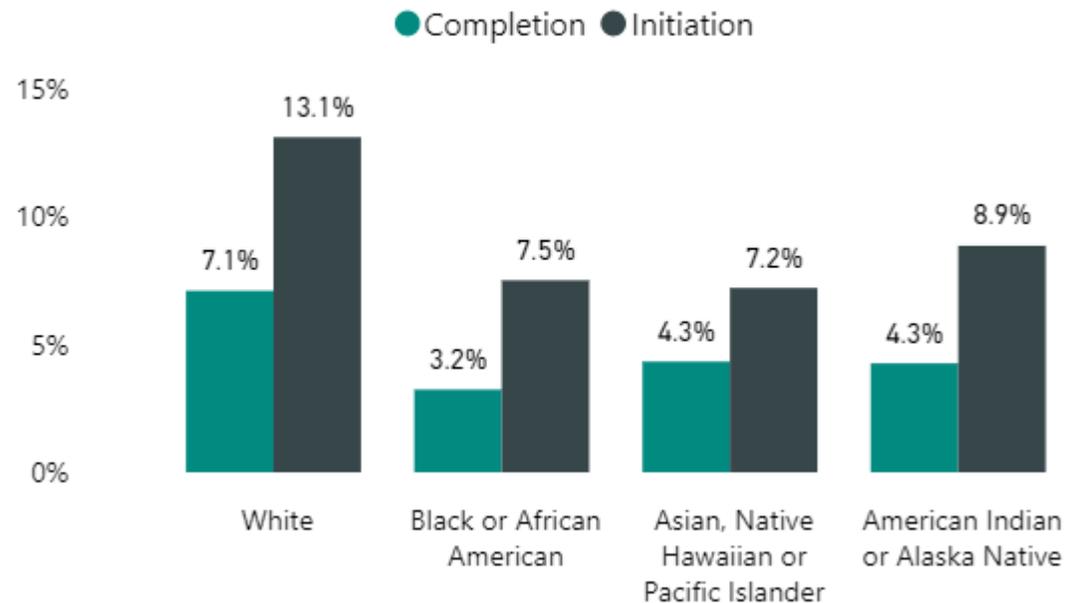
Persons 75 years of age and older have the highest initiation coverage (56.1% up from 48.6% last week)



Coverage by Race: State Level

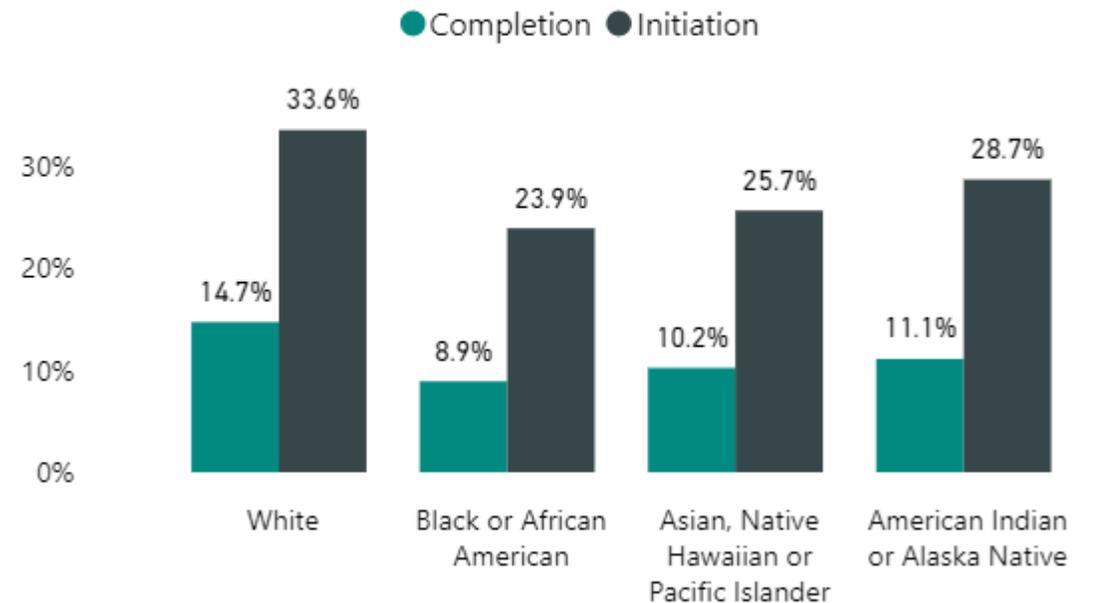
16 and older

Coverage by Race - State Level



65 and older

Coverage by Race - State Level



35.6% data missing or unknown

Coverage was highest among those of White Race (13.1%), then American Indian (8.9%), Black or African American (7.5%), and Asian, Native Hawaiian or Pacific Islander (7.2)

Initial Coverage disparities are seen in 65+ age group as well: 33.6% White, 28.7% American Indian or Alaskan Native, 25.7% Asian, Native Hawaiian or Pacific Islander, and 23.9% Black or African American

Science Round Up

Seroprevalence of COVID in Michigan is 17.4%

- 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
- Seroprevalence reflects overall burden in reported cases rates (highest among 18–49-year-olds)

Hospital

- Hospitals across the state reported high surge levels over winter, following case increases above 150 cases per million

Modeling projections

- Transmission modeling illustrates how reducing social distancing may lead to increases over the next few weeks
- Ridge regression model projects potential increases for Michigan and for all MERC regions

Mask

- Mask mandates and restricting any on-premises dining at restaurants can help limit community transmission of COVID-19 and reduce case and death growth rates

Interim Recommendations for Fully Vaccinated People

- People who are fully vaccinated can start to do some things they stopped doing because of the pandemic

Nationwide Commercial Laboratory Seroprevalence Survey

Last Updated:
03/03/2021

United States COVID-19 Seroprevalence Estimate by State



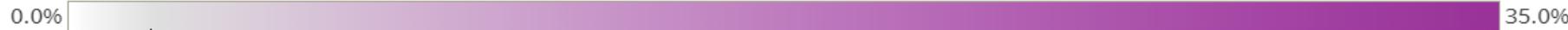
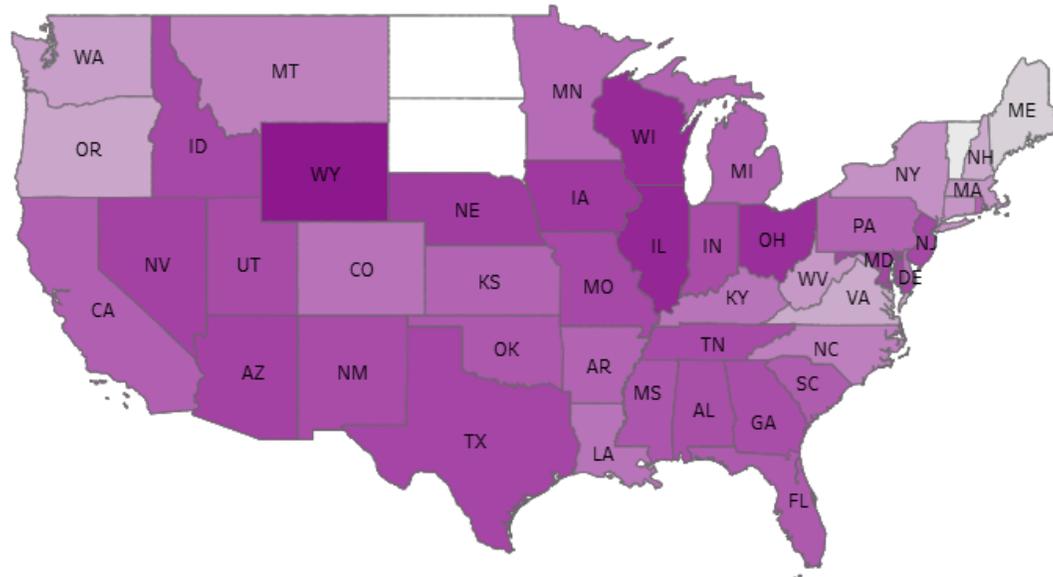
About the Study



Select a Two Week Period to View

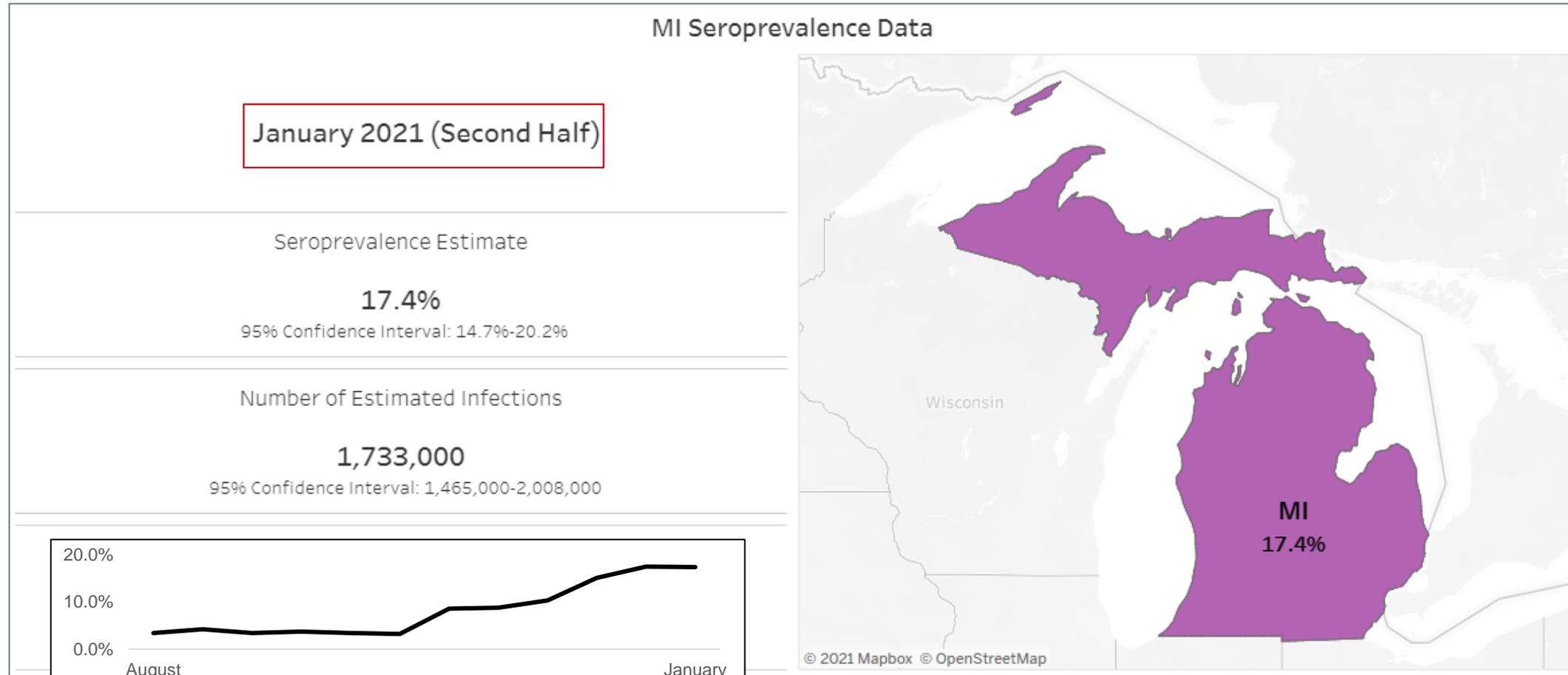
2020

2021



- 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 **January 2021**
- Despite the surge of cases in Michigan during the early months of the epidemic, Michigan has fared relatively better than neighboring states

Michigan Commercial Laboratory Seroprevalence Survey



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

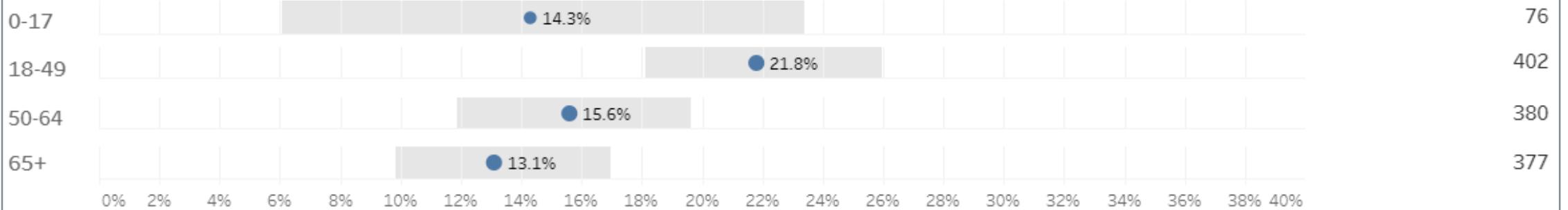
Michigan Commercial Laboratory Seroprevalence Survey – Age and Sex Distributions

Catchment Area: Statewide

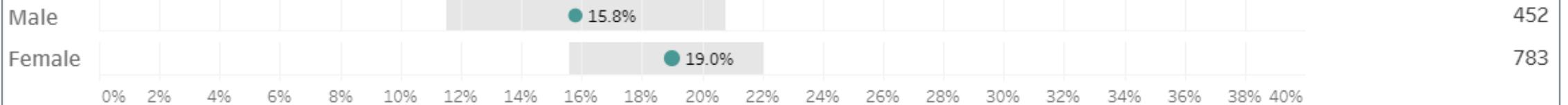
Number of Samples Tested: 1,235

Age Specific Seroprevalence Estimate

Samples

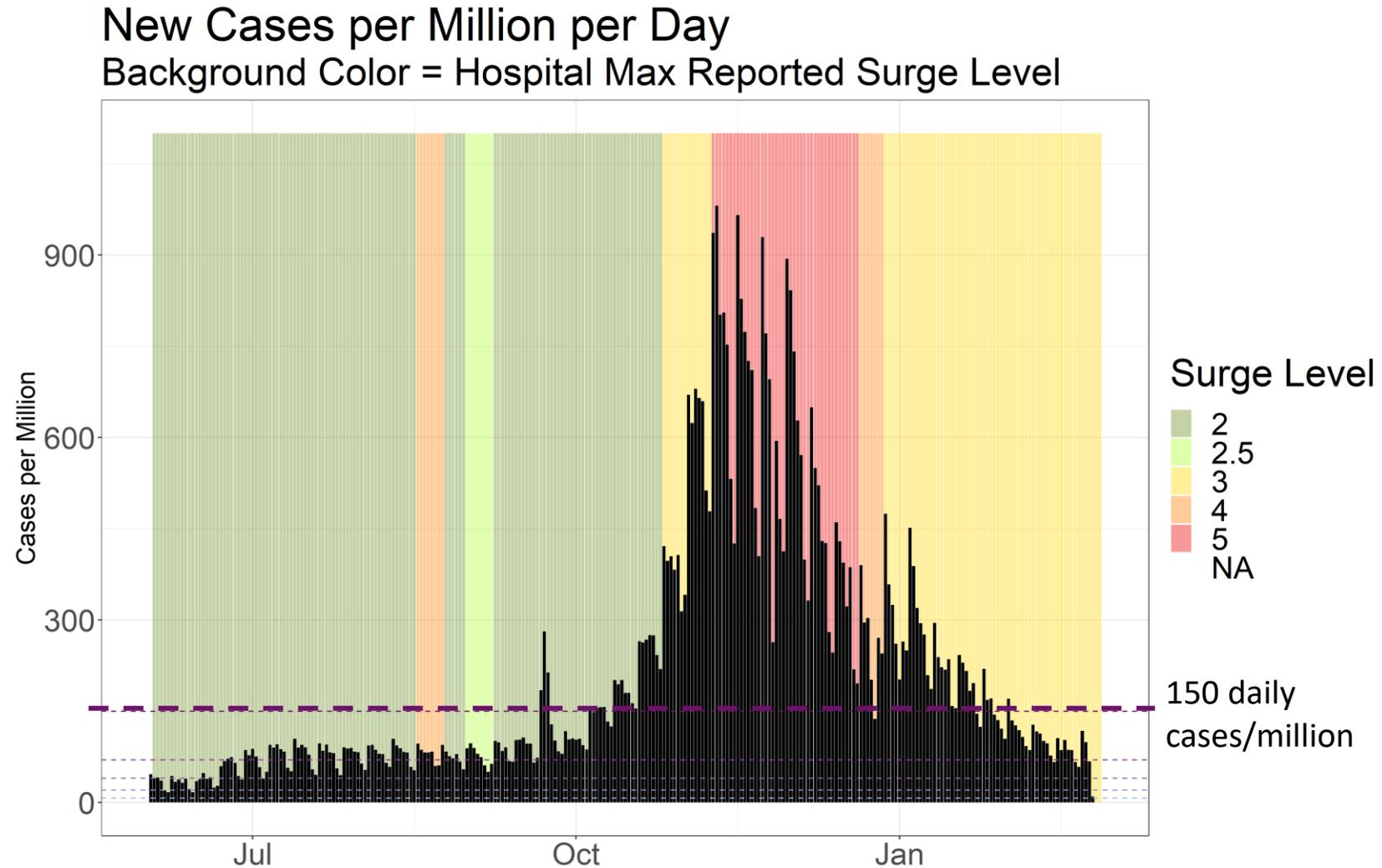


Sex-Specific Seroprevalence Estimate

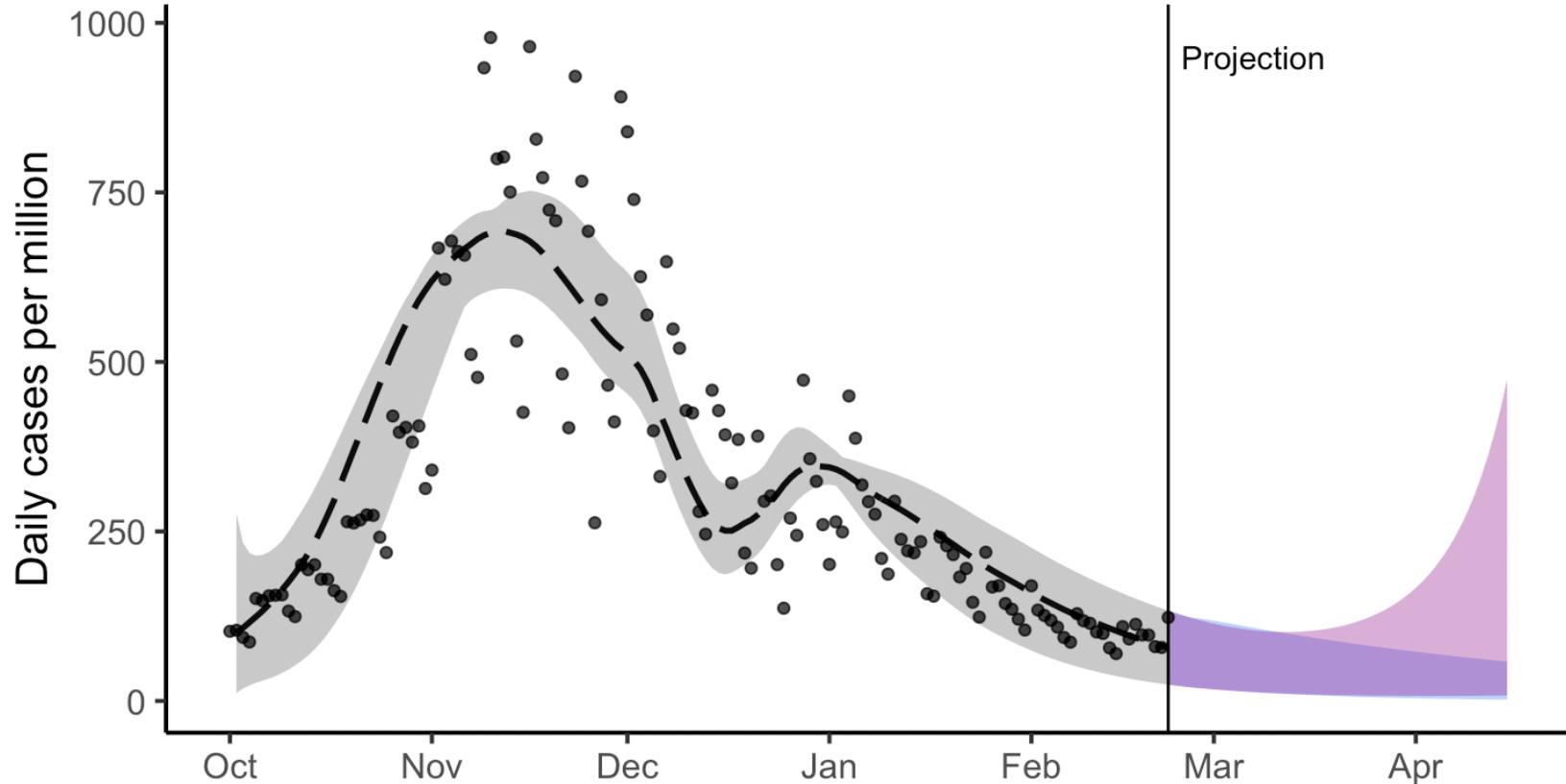


Hospital surge level over time in Michigan

- During the most recent case increases, hospital systems across the state reported high surge levels (red), indicating that external surge plans were implemented
- High surge in all regions followed cases crossing 150 daily cases per million
- Hospitals in 3 MERC regions reported red surge levels over the Fall/Winter wave, and 7/8 reported orange or red



Scenario: examining the potential for increasing cases due to reduced social distancing

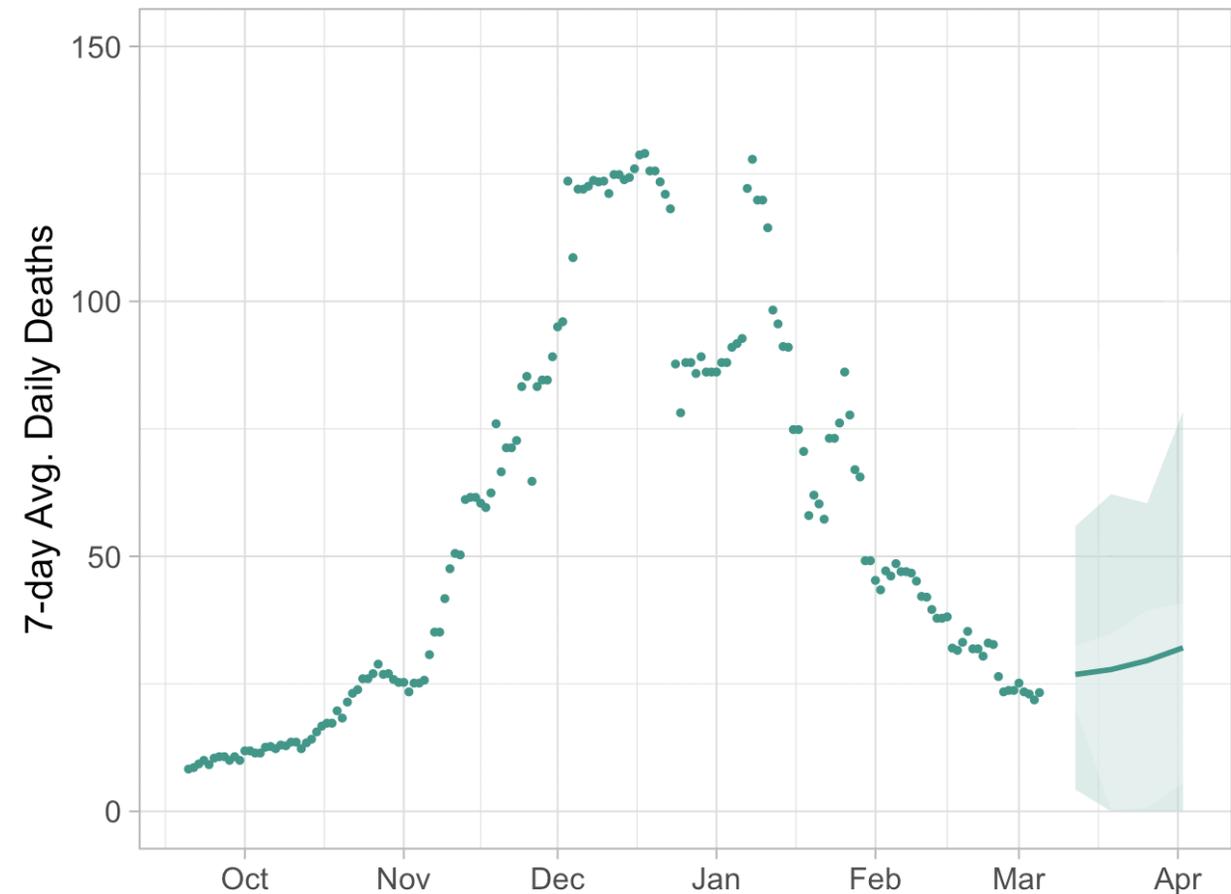
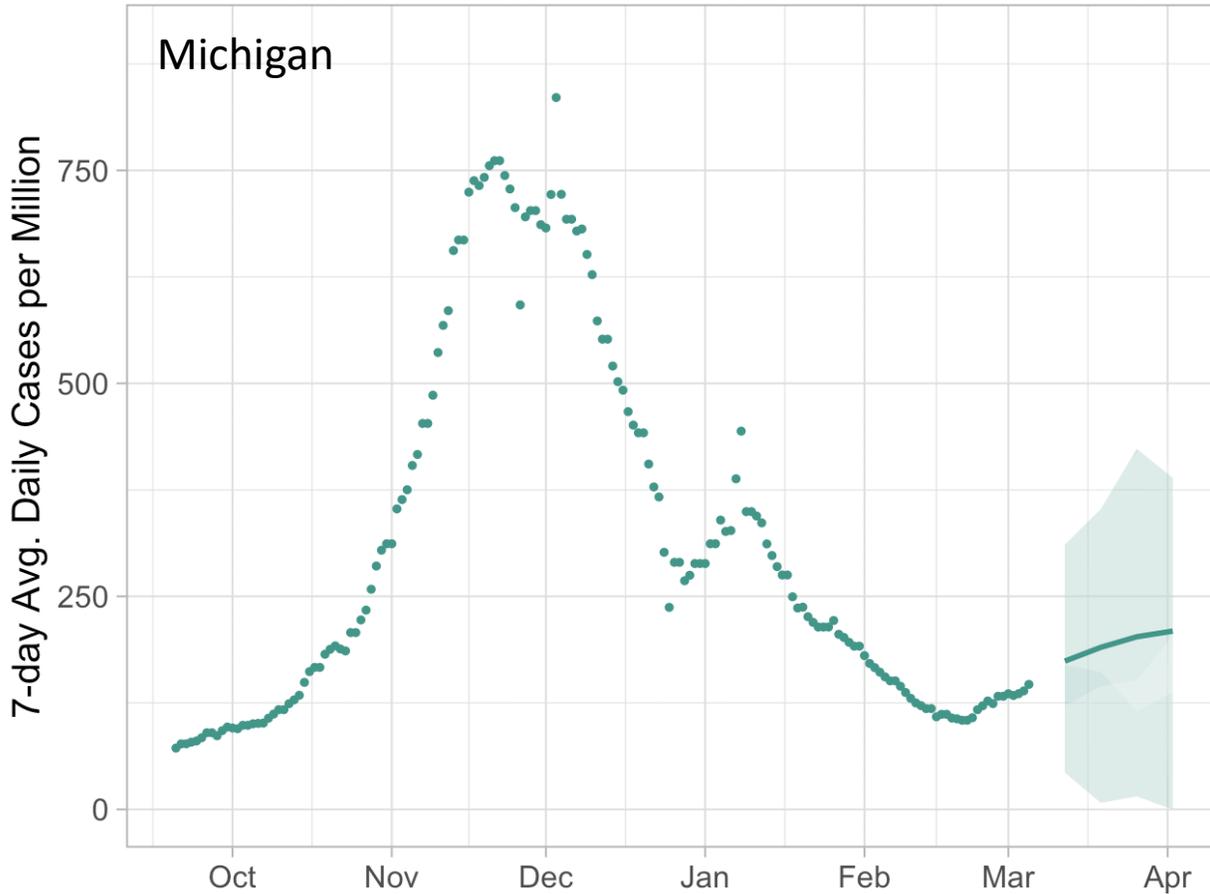


- Transmission model scenarios for changing contact patterns
-  Constant or declining contact levels (stronger social distancing)
-  Increasing contact levels (less social distancing)
-  Both scenarios
-  Model fit to data

Model projections are scenarios rather than forecasts—actual contact patterns may not reflect the projected scenarios. Model calibrated to MDSS case data (includes MDOC cases), using mobility data (Unacast encounter rate) to determine contact patterns. Contact increases are set for a 33% return to baseline contact levels by 4/15/21. Uncertainty: top 25% of 1000 parameter estimates. Dashed line represents median across simulations.

Michigan cases and deaths may increase in coming weeks

- Recent decline and plateau may shift into an increase
- Uncertainty range includes both continued decline/plateau as well as increasing cases/deaths
- Ridge regression model 'learns' patterns based on previous case and death data



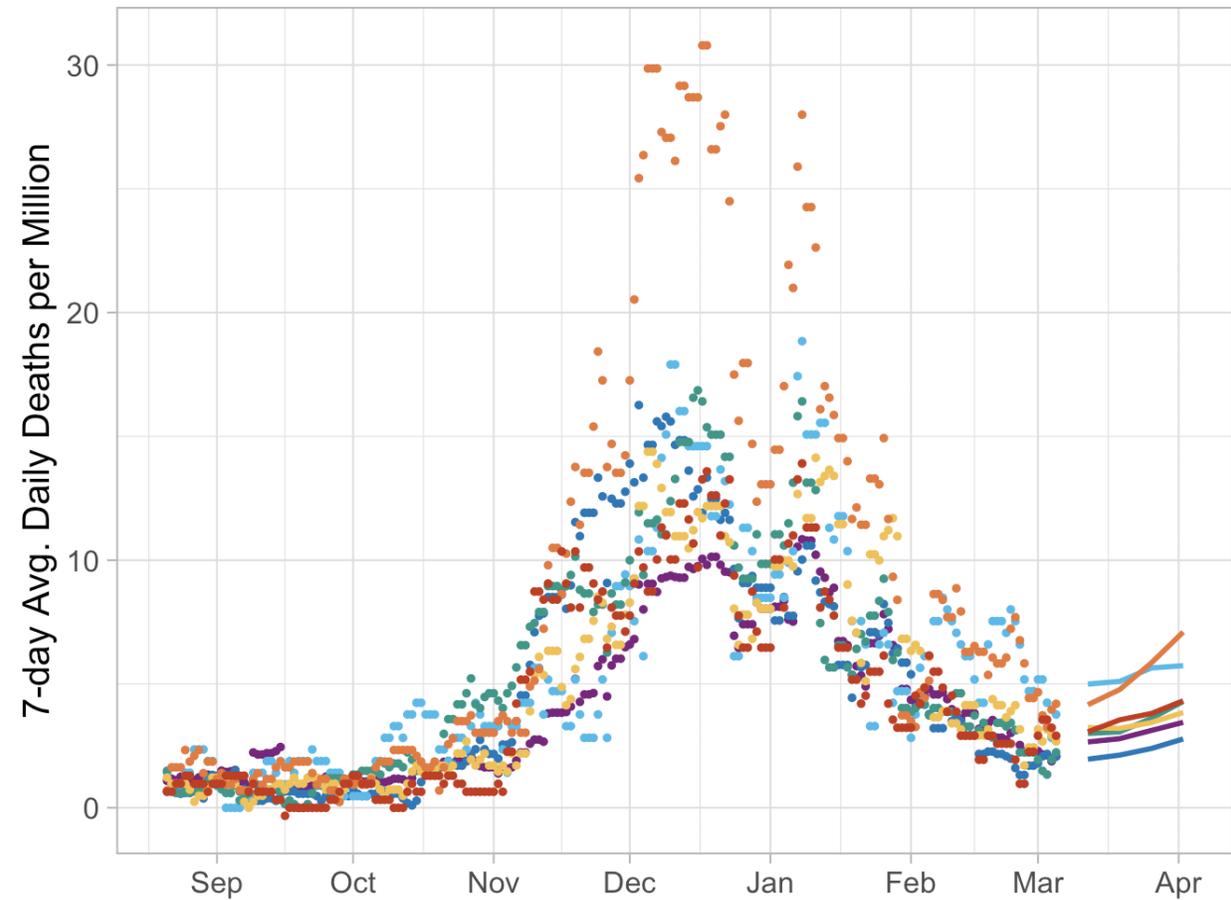
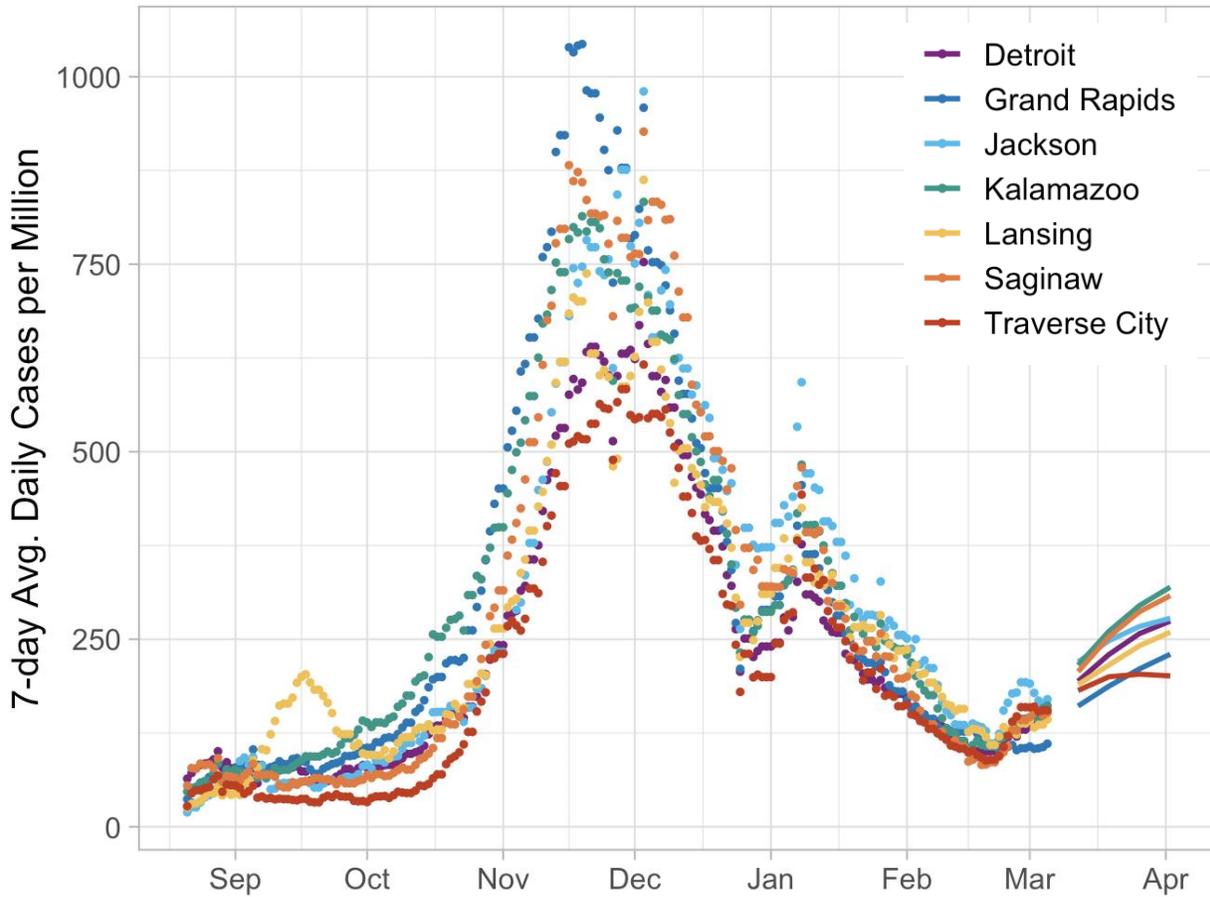
Line is the ridge regression model projection, and the shaded region represents the 95% confidence region (2.5% and 97.5% quantiles).

Sources: Data from MDHHS/JHU,
[UM Ridge Regression Model](#)



Similar increase pattern projected for most MERC regions

- Recent decline and plateau may shift into an increase
- Uncertainty regions are not plotted for visual clarity but are similar to the statewide view



Sources: Data from MDHHS/JHU,
[UM Ridge Regression Model](#)



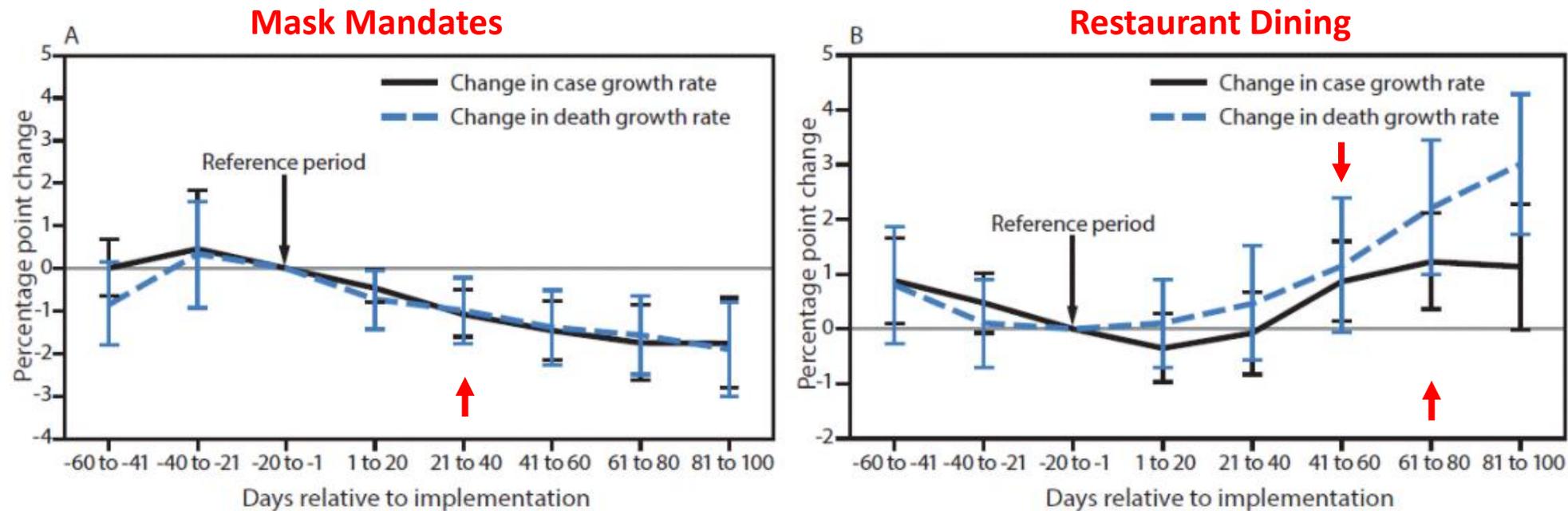
Association of State-Issued Mask Mandates and Allowing On-Premises Restaurant Dining with County-Level COVID-19 Case and Death Growth Rates — United States, March 1–December 31, 2020

Early Release / March 5, 2021 / 70

Gery P. Guy Jr., PhD¹; Florence C. Lee, MPH¹; Gregory Sunshine, JD¹; Russell McCord, JD¹; Mara Howard-Williams, JD²; Lyudmyla Kompaniyets, PhD¹; Christopher Dunphy, PhD¹; Maxim Gakh, JD³; Regen Weber¹; Erin Sauber-Schatz, PhD¹; John D. Omura, MD¹; Greta M. Massetti, PhD¹; CDC COVID-19 Response Team, Mitigation Policy Analysis Unit; CDC Public Health Law Program ([View author affiliations](#))



FIGURE. Association between changes in COVID-19 case and death growth rates* and implementation of state mask mandates[†] (A) and states allowing any on-premises restaurant dining[§] (B) — United States, March 1–December 31, 2020



Community requirements that affect universal mask use are associated with changes in spread of COVID-19

IN COUNTIES WHERE STATES
REQUIRED MASKS



Case and death rates
slowed*



IN COUNTIES WHERE STATES
ALLOWED ON-SITE RESTAURANT DINING



Case and death rates
sped up*



Community requirements that support mask use are associated with reduced spread

REDUCE SPREAD

PREVENT INFECTIONS

PREVENT DEATHS

* Data on state mandates were compared with county-level changes in COVID-19 case and death rates

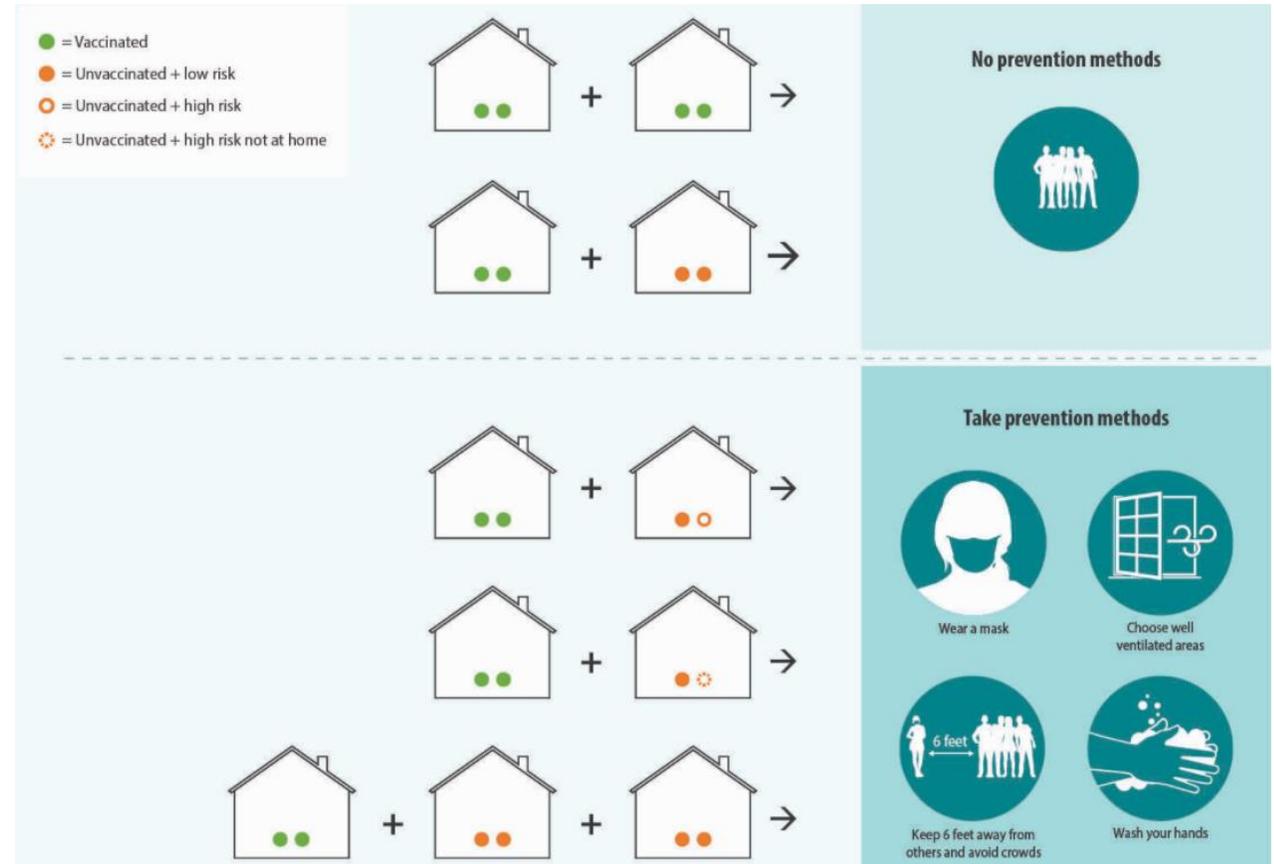
Interim Public Health Recommendations for Fully Vaccinated People

Fully vaccinated people **can**:

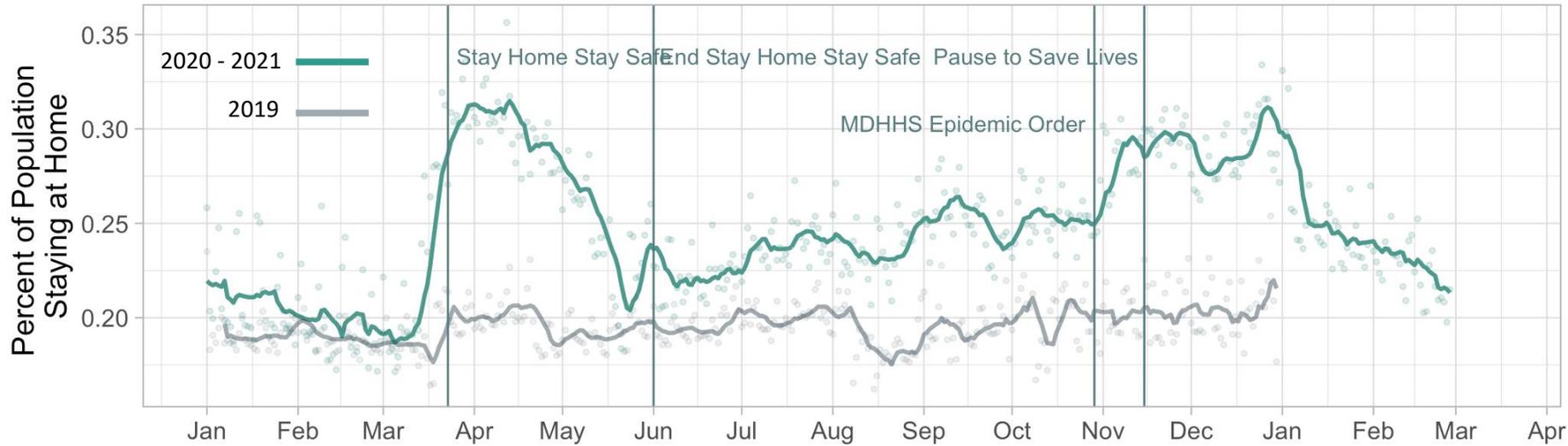
- ✓ Visit with other fully vaccinated people indoors
- ✓ Visit with unvaccinated people from a single household who are at low risk for severe COVID-19 disease
- ✓ Refrain from quarantine and testing following a known exposure if asymptomatic

Fully vaccinated people **should continue** to:

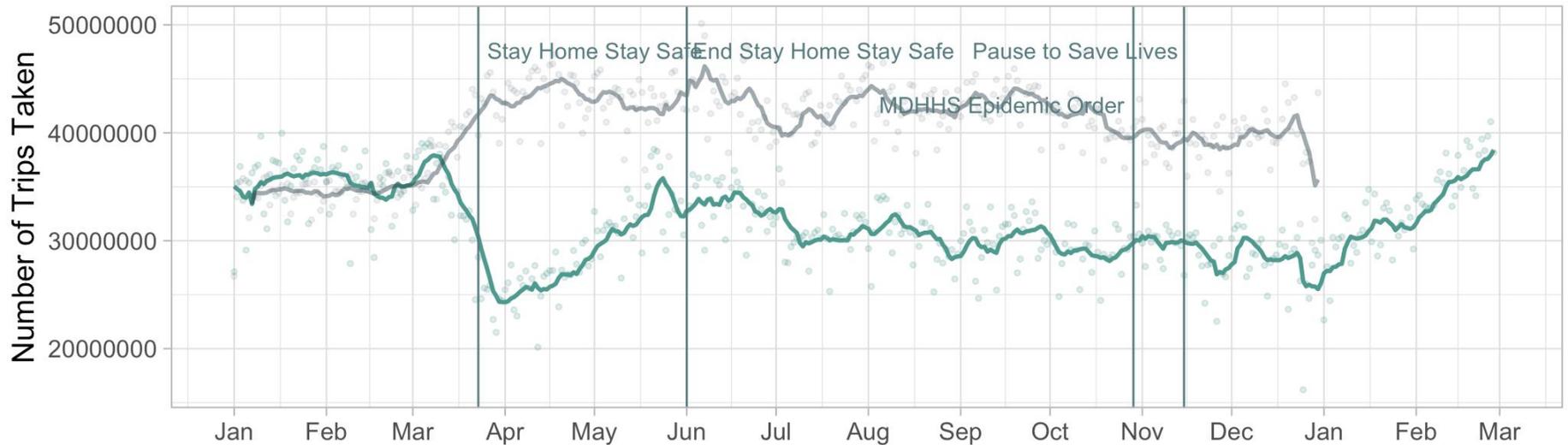
- Take precautions in public, when visiting those at increased risk for severe disease or living with someone at risk for severe disease, multiple households
- Avoid medium- and large-sized in-person gatherings
- Get tested if experiencing COVID-19 symptoms
- Follow guidance issued by individual employers
- Follow CDC and health department travel requirements and recommendations



How many people are staying at home in Michigan?



- % Stay-at-home levels have been declining, approaching 2019-2020 levels
- Number of trips taken/day has recently increased to 2019-2020 levels
- Most recent data is 2/28/21 (data as of 3/8/21)

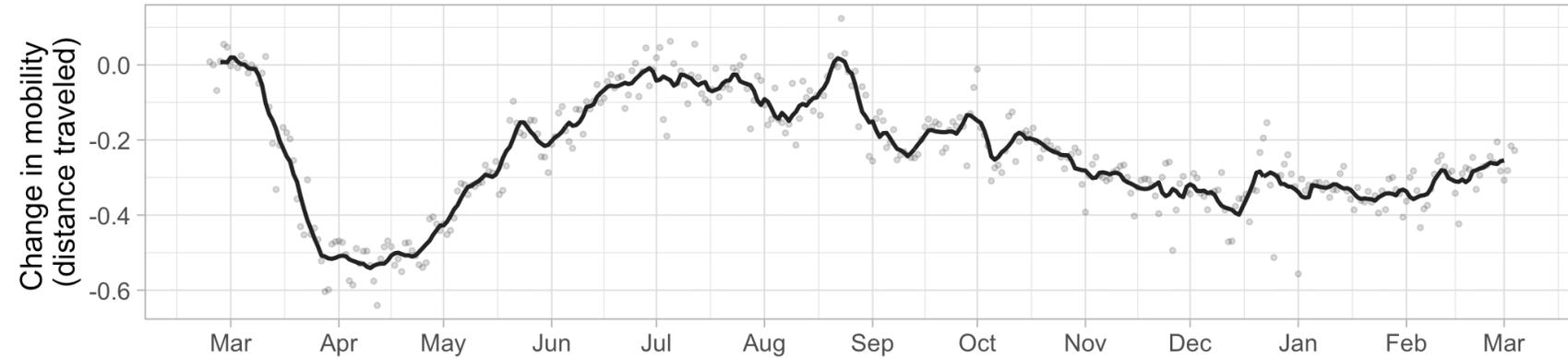


Data Source: [Bureau of Transportation Statistics](#)

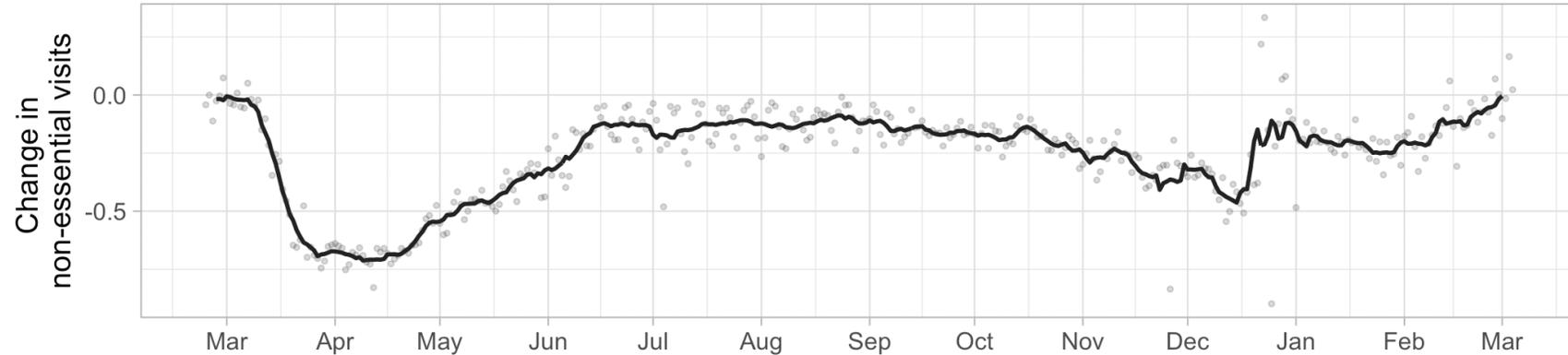
Unacast mobility patterns in MI

- Most recent data shows some return toward baseline mobility patterns, particularly for non-essential visits.
- Encounter density has stayed relatively low.
- Data through 3/4/21 (data as of 3/8/21)

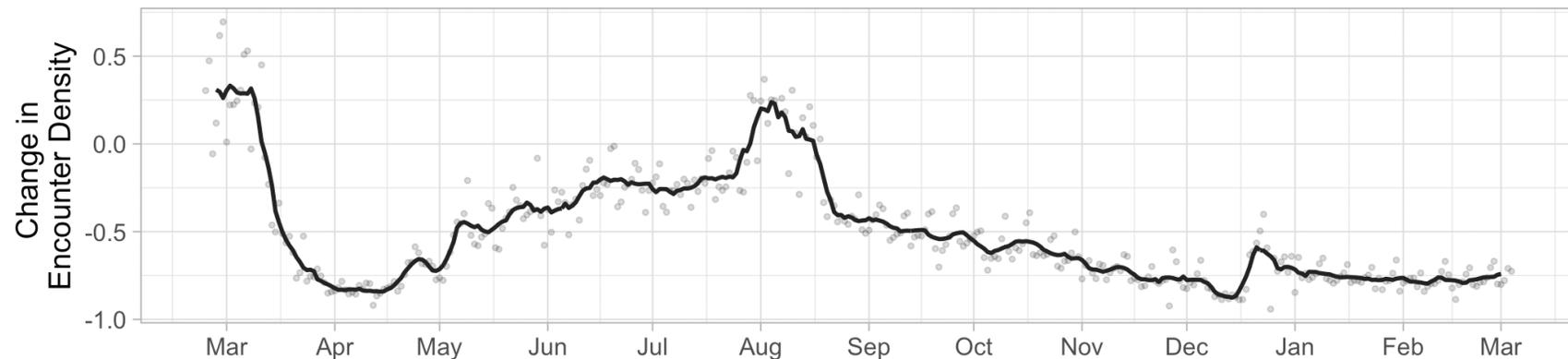
Change in average mobility



Change in non-essential visits



Difference in encounter density



unacast social distancing scoreboard

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