MI COVID RESPONSE DATA AND MODELING UPDATE

NOTE: All data as of Feb. 6 unless otherwise noted

February 9, 2021

Executive summary

Michigan has the **23rd highest number of cases (↓1)** , **20th highest number of deaths (↓2)**, **49th highest case rate (↓2)**, and **T35th highest death rate (↑4)** in the last 7 days (source: CDC COVID Data Tracker)

Michigan has the **37th highest hospitalization rate as a percent of total beds (↔)**, and **16th highest number of COVID patients in the ICU (↔)** (source: Becker's Hospital Review)

Case rates (144.3, ↓37.5) and **percent positivity** (4.5%, ↓1.2%) are declining for 4 weeks

6.3% of available inpatient beds are filled with COVID patients (↓1.0%) and state trends for COVID hospitalizations are decreasing

There were **286 deaths** (↓87) between Jan 24 and Jan 30, and **death rate** is 4.1 deaths per million residents (↓1.3)

Daily diagnostic tests increased to an average of 33.1K per day (↓3.7K) over the last week and the **state testing rate** is 3,327.3 tests/million/day (↓452.7) The **weekly average for PCR and antigen tests** conducted in Michigan is 41K.

1.2 million **COVID-19 vaccine** doses reported to MDHHS, 11.7% of population has at least one dose

Science roundup on SARS-CoV-2 mutation, testing for variants, Johnson & Johnson vaccine forthcoming, and racial differences in CFR and other disparity indicators

Comparison across states: Summary 2/8/21

What we see today:

- Zero states are seeing increasing 1 week case trends (up vs. 1 last week)
- 38 states (down vs. 43) with significant outbreaks (high/increasing cases, increasing/high positivity increasing/high hospitalizations over 2 weeks (>100 per M))
- Arizona (400/M), New York, Georgia, New Jersey, Nevada have highest per capita hospitalized patient numbers
- Midwest:
  - Wisconsin showing slight drop in hospitalizations (98/M) and drop in cases (221/M)
  - Indiana with decline in hospitalizations (191/M), and sharp drop in cases (277/M)
  - Illinois showing slow decline in hospitalizations (173/M), cases dropping (230/M)
  - Ohio with declining hospitalizations (169/M) and stable cases (309/M)
  - Michigan showing continued decline in hospitalizations (110/M) and slight decline in cases (151/M)

COVID-19 Spread

Statewide positivity has decreased to 4.5%, and is decreasing in all MERC regions

- All eight MERC regions now below 7% (Risk Level A)
- One region, Upper Peninsula, is below 3% (Risk Level Low)
- Nearly all counties (82) have positivity below 10%

Case rates have steadily declined to 144.3 cases per million (Risk Level E)

- 81% decrease from the mid-November peak
- Declines are seen among most age groups, races, and ethnicities
- In the past 30 days, approximately 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
  - 690 cases with the B.1.1.7 variant have been identified in the US, 45 in Michigan

Number of active outbreaks is down 9% from previous week

- Reported school outbreaks have increased since last week (86 to 113) with outbreaks increasing in all K-12 school settings

Confirmed and probable case indicators

Table Date: 2/6/2021 (7 days from date table was produced: 1/30/2021)

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	D	134.6	decline [27 days]	4.3	Decrease - 4wk	3137.5	0.4	Decrease - 1wk	6.5	4.0	Decrease - 6wk
Grand Rapids	2	6	D	140.9	decline [27 days]	4.7	Decrease - 4wk	3227.2	0.6	Decrease - 4wk	5.3	4.6	Decrease - 2wk
Kalamazoo	3	5	E	172.3	decline [26 days]	5.8	Decrease - 4wk	3408.4	0.7	Decrease - 1wk	6.0	2.8	Decrease - 1wk
Saginaw	4	3	D	146.0	decline [79 days]	4.9	Decrease - 4wk	3196.6	0.4	Increase - 1wk	6.8	4.2	Decrease - 2wk
Lansing	5	1	E	198.6	decline [28 days]	5.4	Decrease - 4wk	2832.6	0.2	Decrease - 2wk	9.6	5.1	Decrease - 2wk
Traverse City	6	7	D	129.4	decline [26 days]	4.9	Decrease - 3wk	2448.4	0.9	Increase - 1wk	3.6	4.2	<20 wkly deaths
Jackson	7	1	E	191.8	decline [26 days]	6.1	Decrease - 4wk	3694.7	0.5	Increase - 1wk	8.7	3.3	<20 wkly deaths
Upper Peninsula	8	8	D	106.7	decline [27 days]	1.6	Decrease - 4wk	3752.9	0.6	Increase - 1wk	3.5	5.6	<20 wkly deaths
Michigan			D	144.3	decline [27 days]	4.5	Decrease - 4wk	3327.3	0.4	Decrease - 10wk	6.3	4.1	Decrease - 7wk

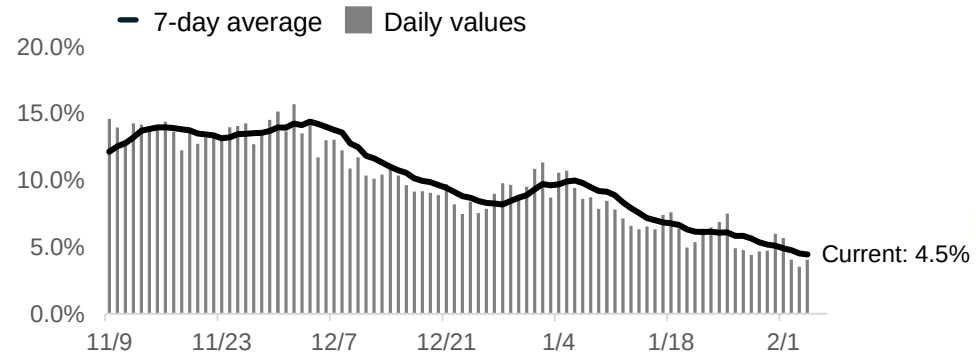
Cases Low: <7 | A: 7-20 | B: 20-40 | C: 40-70 | D: 70-150 | E: >=150

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

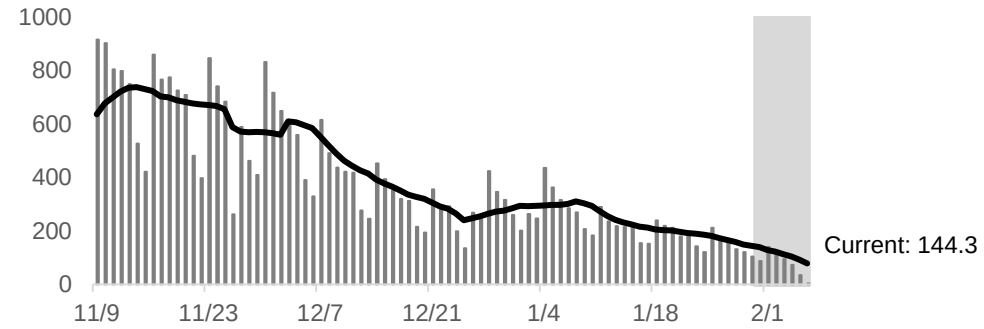
Recent statewide trends

Statewide trends

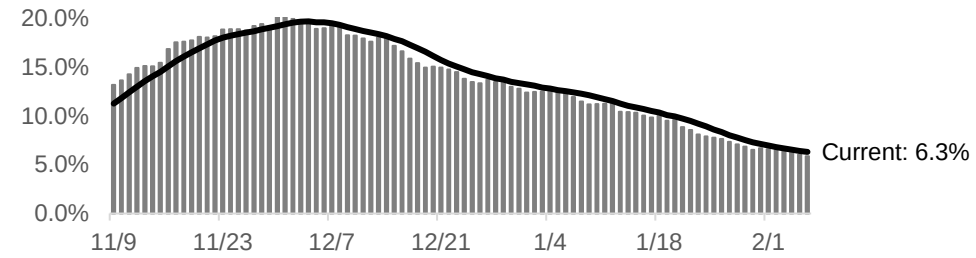
Positivity, %



Daily cases per million



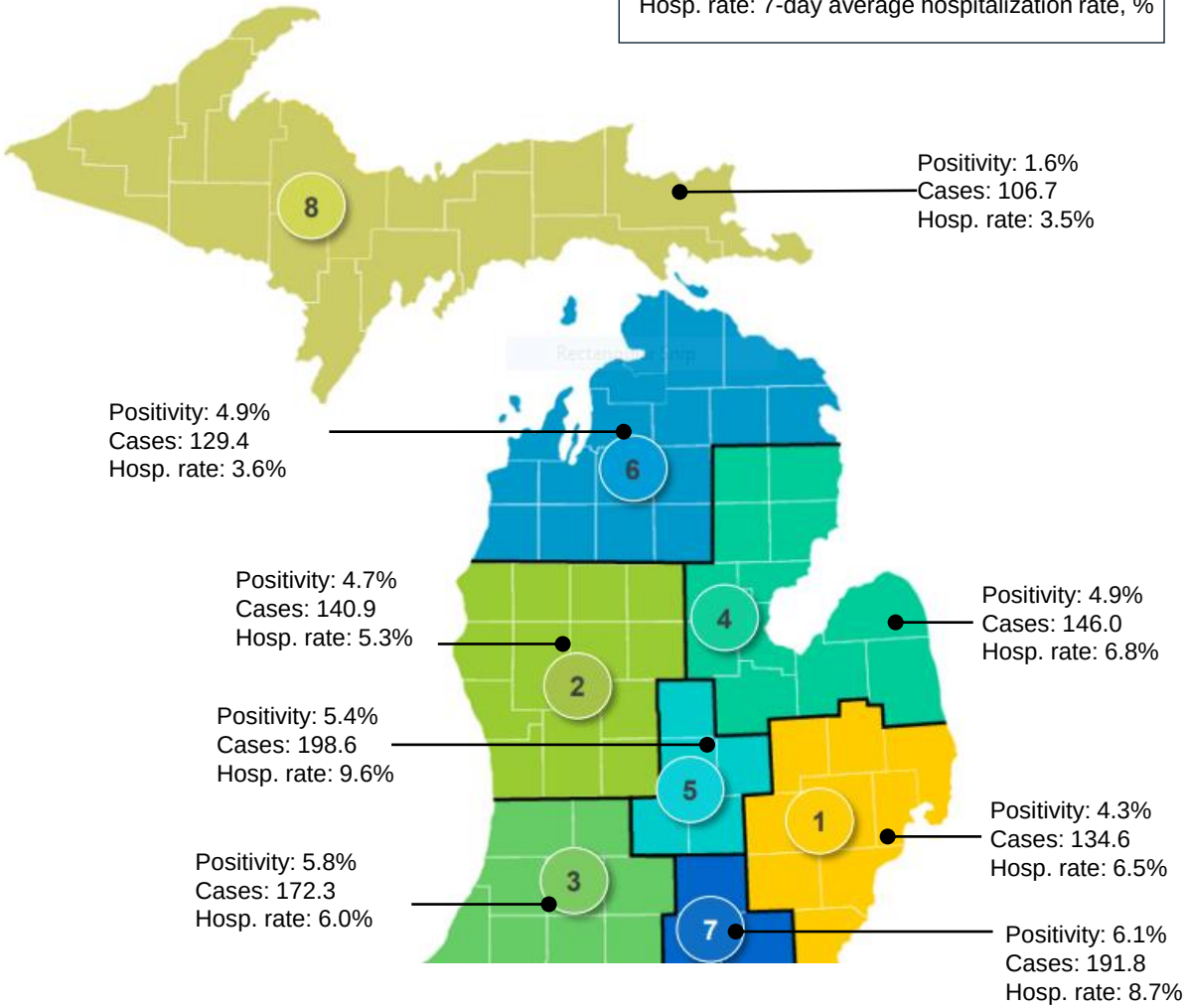
Daily hospitalization rate, %



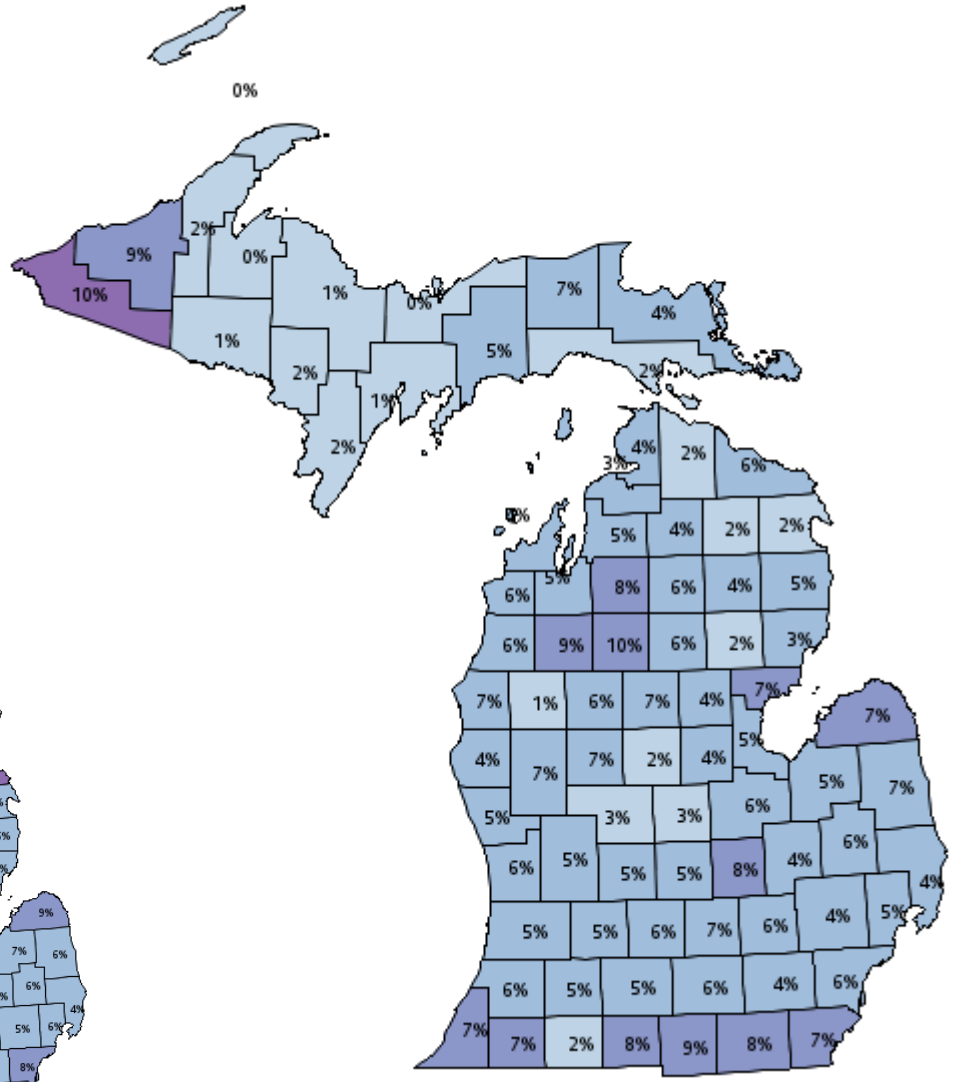
Source: https://mistartmap.info/

Regional breakdown: Cases, hospitalization rate, and positivity

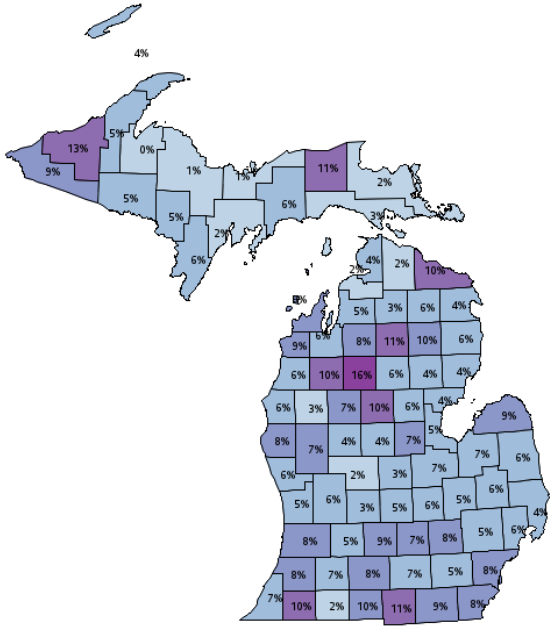
Positivity: 7-day average positivity, %
Cases: 7-day average cases per million
Hosp. rate: 7-day average hospitalization rate, %

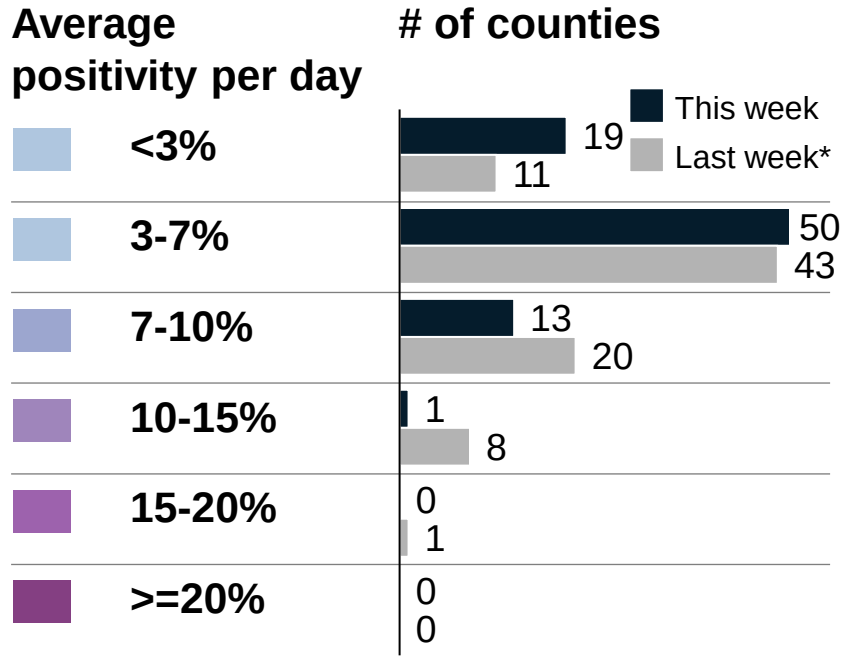


Positivity by county, 1/29-2/4



Last week, 1/22-1/28





Updates since last week:

1 of 83 counties saw double digit positivity in the last week (8 county decrease)

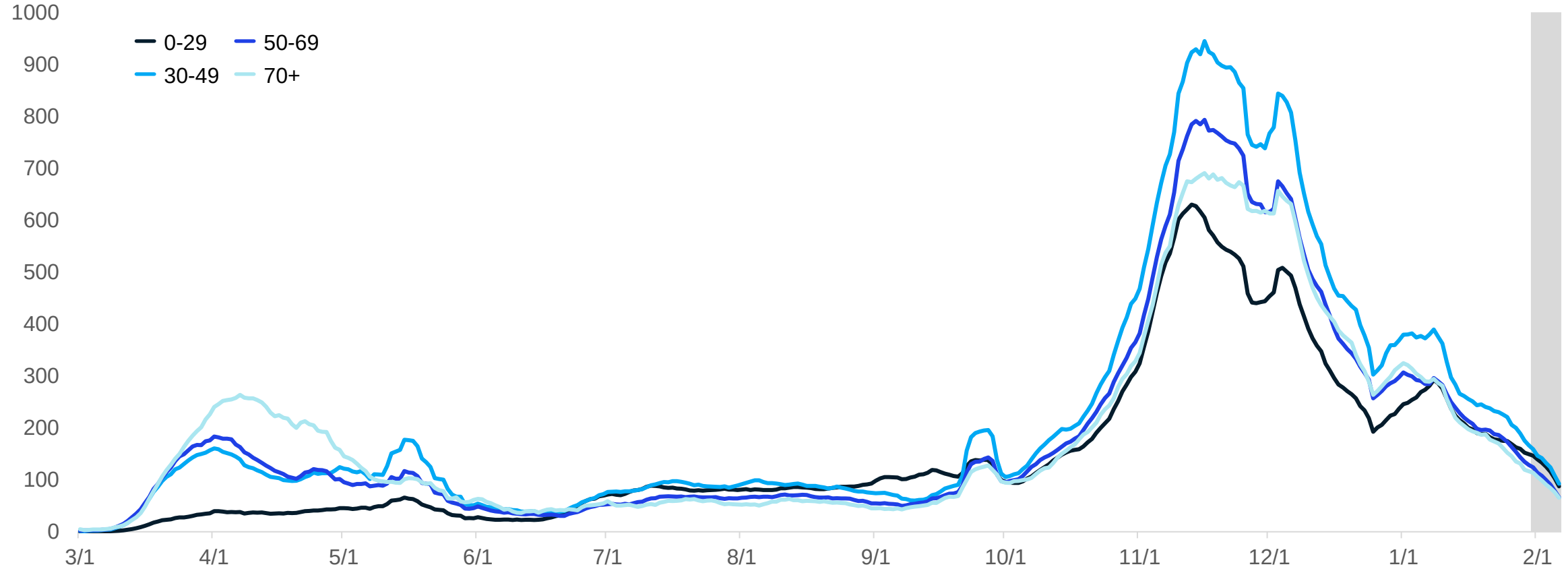
14 of 83 counties saw positivity > 7% in the last week (15 county decrease)

64 of 83 counties saw positivity > 3% in the last week (8 county decrease)

Source: SEOC Testing Results – Excluding MDOC

Age group: average new daily cases

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

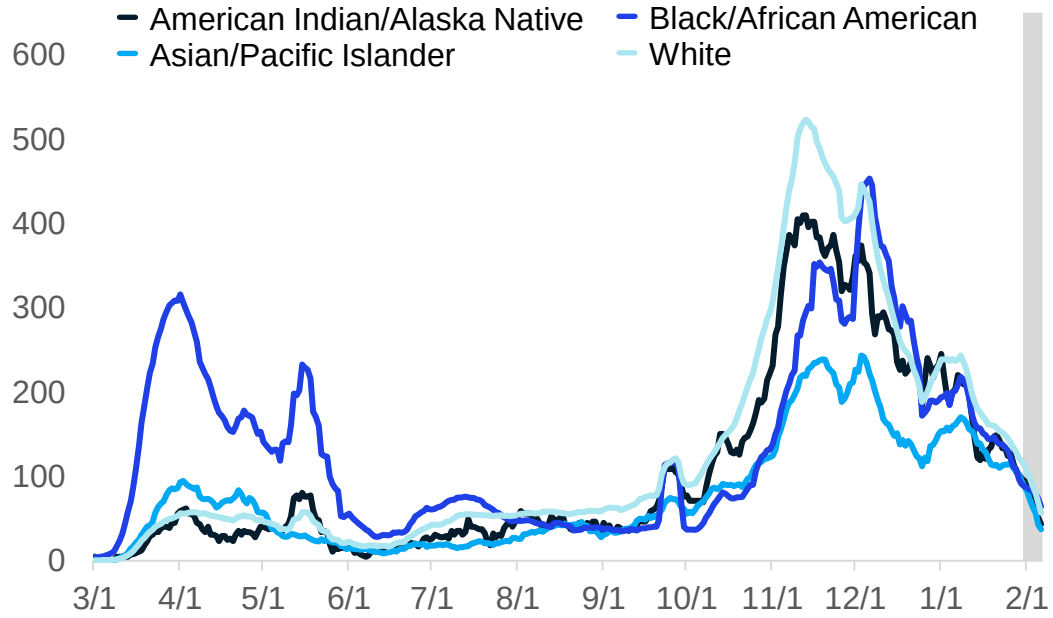


- 30-49 age group continues to have the highest cases per million
- All four age groups are decreasing

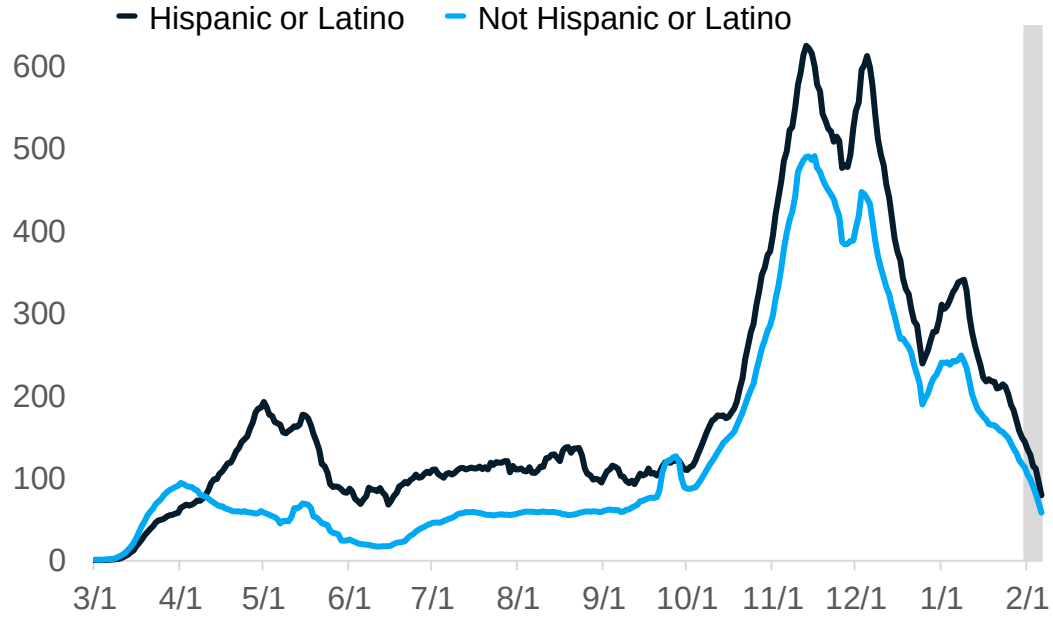
Note: Case information sourced from MDHHS and reflects date of onset of symptoms
Source: MDHHS – Michigan Disease Surveillance System

Average daily new cases per million people by race 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 now decreasing for all racial groups, as well as both Hispanic/Latinos and non-Hispanic/Latinos
- In the past 30 days, 25% of all cases represent unknown, multiple, or other races (16% of race is unknown, ↓1%)
- In the past 30 days, 19% of all cases have an unknown ethnicity reported (↓2%)

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

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

Emerging Variant Cases in the United States*†

Variant	Reported Cases in US	Number of States Reporting
B.1.1.7	690	33
B.1.351	6	3
P.1	3	2

State	Cases Count
FL	201
CA	150
NY	59
CO	33
MI*	45
GA	23
NJ	19
CT, IL, TX	17
MN, MD	16
PA	15
20 other states	≤ 10

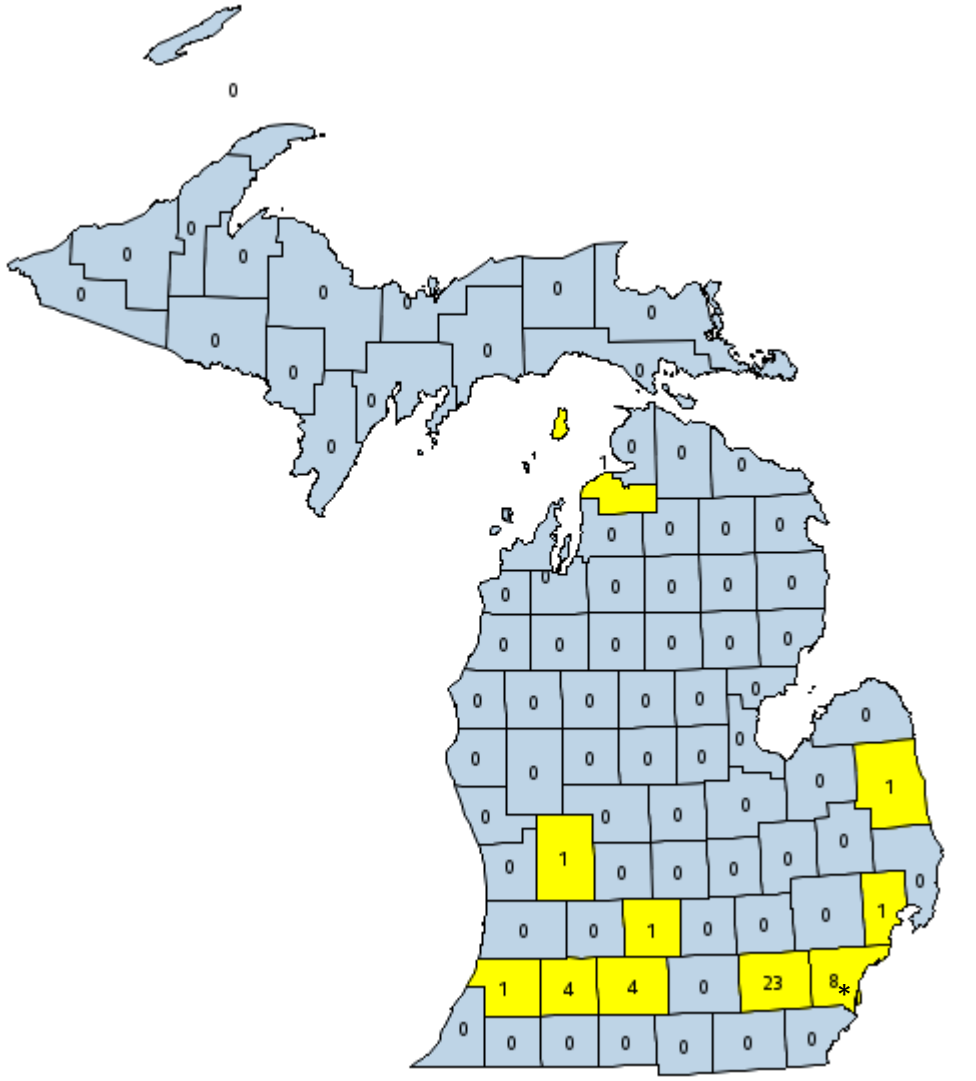
* Sixteen additional cases identified within MDSS that do not yet appear on the CDC dashboard

Data last updated February 7, 2021
Source: https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant-cases.html

Michigan COVID-19 Variant and Response

- 45 B.1.1.7 cases and counting
- 10 counties

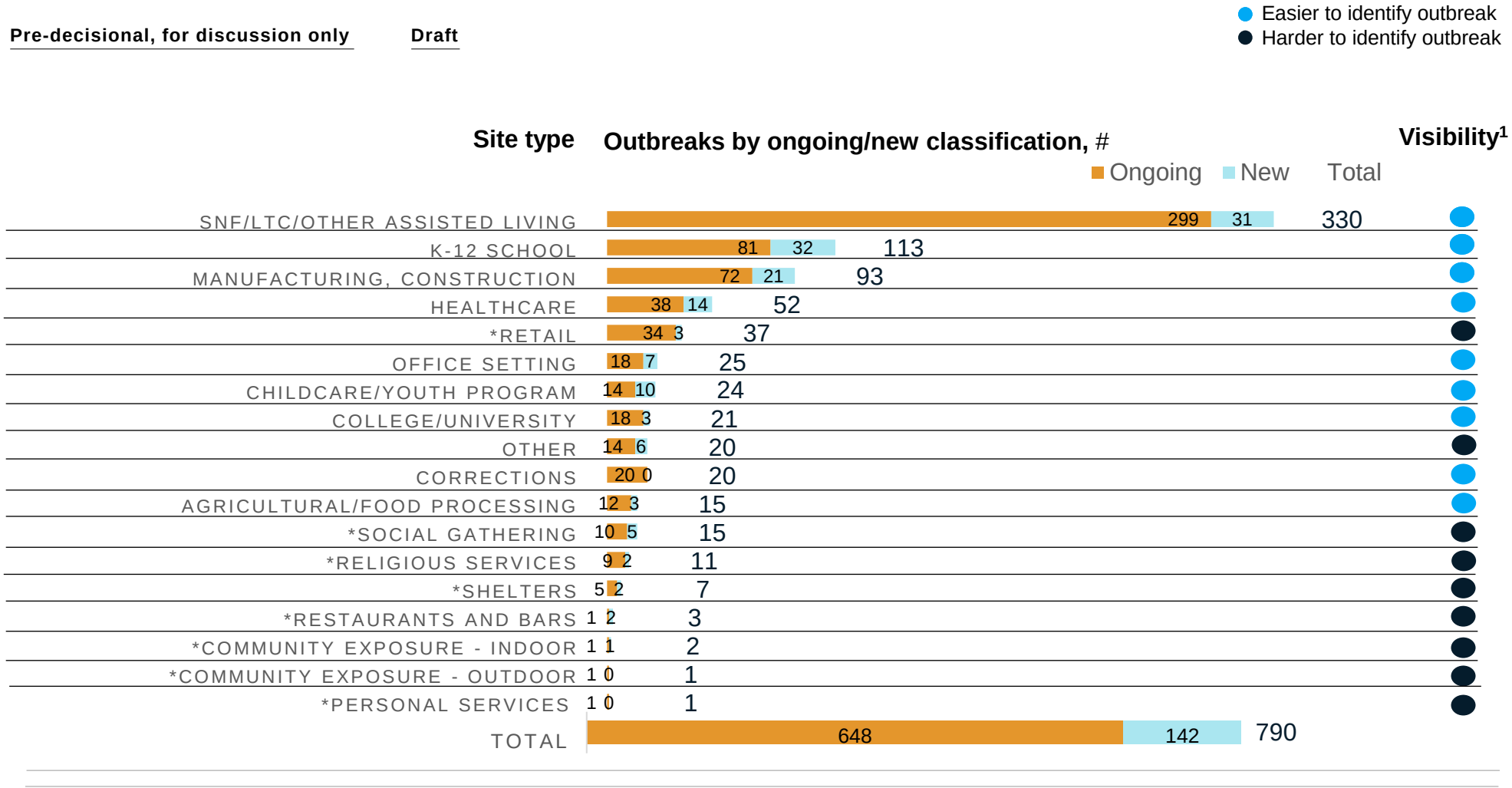
- Goal: Slow spread of B.1.1.7 to allow for vaccination of vulnerable individuals
- Public Action:
  - Masks (and face shields)
  - Social Distancing
  - Hand washing
  - Get tested if traveled out of MI in last 14 days



* Two cases within Detroit City

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

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



Total number of active outbreaks is down 9% from previous week

Following K-12 schools, the greatest number of new outbreaks were reported in LTCF (31), manufacturing/construction (21), healthcare (14), and childcare (10).

LHDs reported new outbreaks in all settings except outdoor community exposures, personal services and corrections

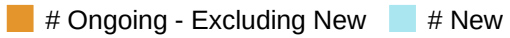
1. Based on a setting's level of control and the extent of time patrons/residents spend in the particular setting, different settings have differing levels of ability to ascertain whether a case derived from that setting

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

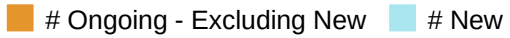
K-12 school outbreaks, recent and ongoing, week ending Feb 4

Number of reported outbreaks increased since last week (86 to 113) including increases in High Schools (28 to 49), Middle/Jr High (14 to 17), Pre K-Elementary (39 to 42), and Administrative (4 to 5).

Region	Number of reported cases, #	Number of outbreaks	Range of cases per outbreak
Region 1	65 | 32	24	2-19
Region 2n	14 | 12	10	2-7
Region 2s	34 | 32	11	2-16
Region 3	149 | 42	16	3-37
Region 5	31 | 13	11	2-13
Region 6	70 | 21	18	2-17
Region 7	52 | 19	19	2-11
Region 8	25 | 5	4	2-20
Total	440 | 176	**113**	**2-37**



Grade level	Number of reported cases, #	Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	154 | 40	42	2-20
Jr. high/middle school	95 | 27	17	2-20
High school	181 | 102	49	2-37
Administrative	10 | 7	5	2-5
Total	440 | 176	**113**	**2-21**



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

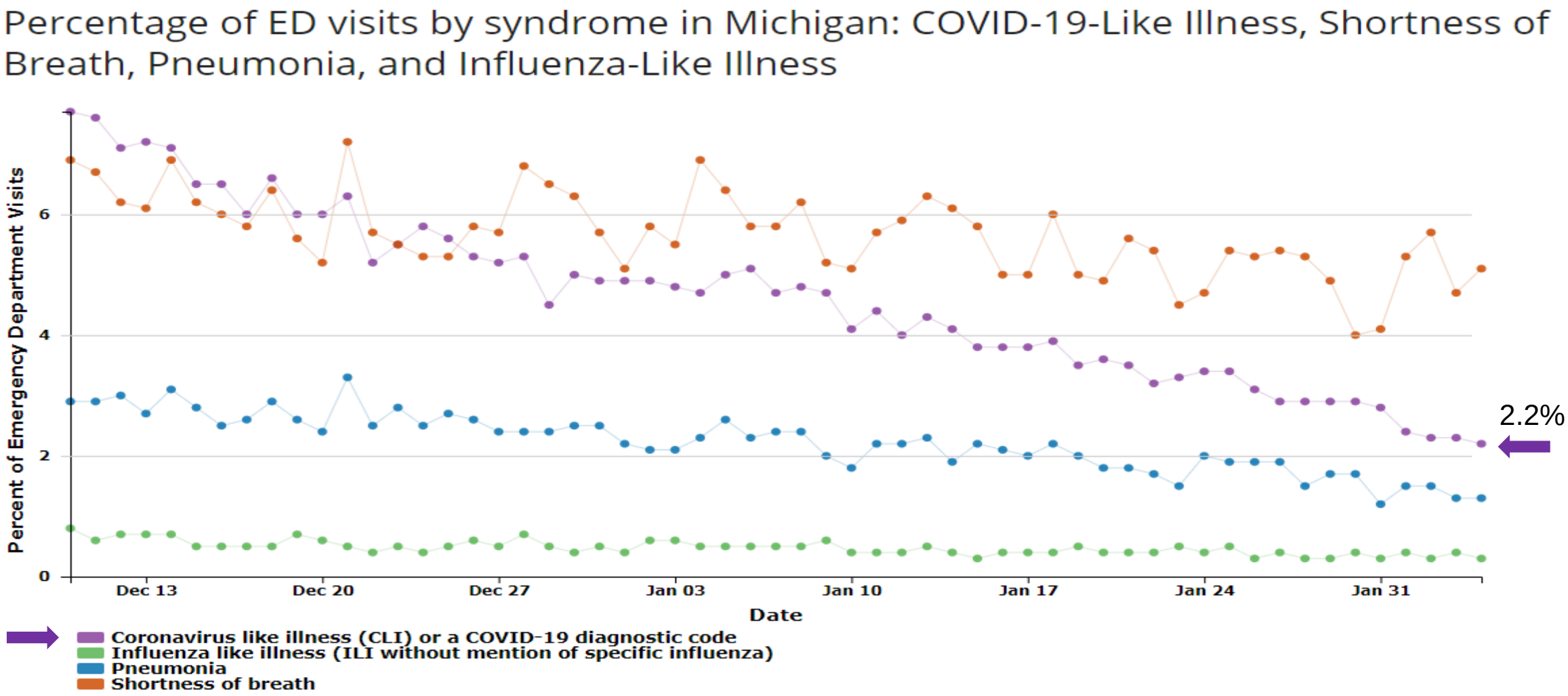
Hospitalizations and ICU utilization are decreasing

- COVID-like illness (CLI) continues with downward trend and is below 3%
- Hospitalizations down 72% since December 1st peak
- ICU occupancy declined 14% over last week
- Seven regions at or below 15% of Adult ICU beds with patients positive for COVID

Current deaths are a lagging indicator of cases, but the number of deaths have declined for seven weeks

- 70% decrease from the peak on December 10
- Decreases in deaths seen among most ages, races, and ethnicities

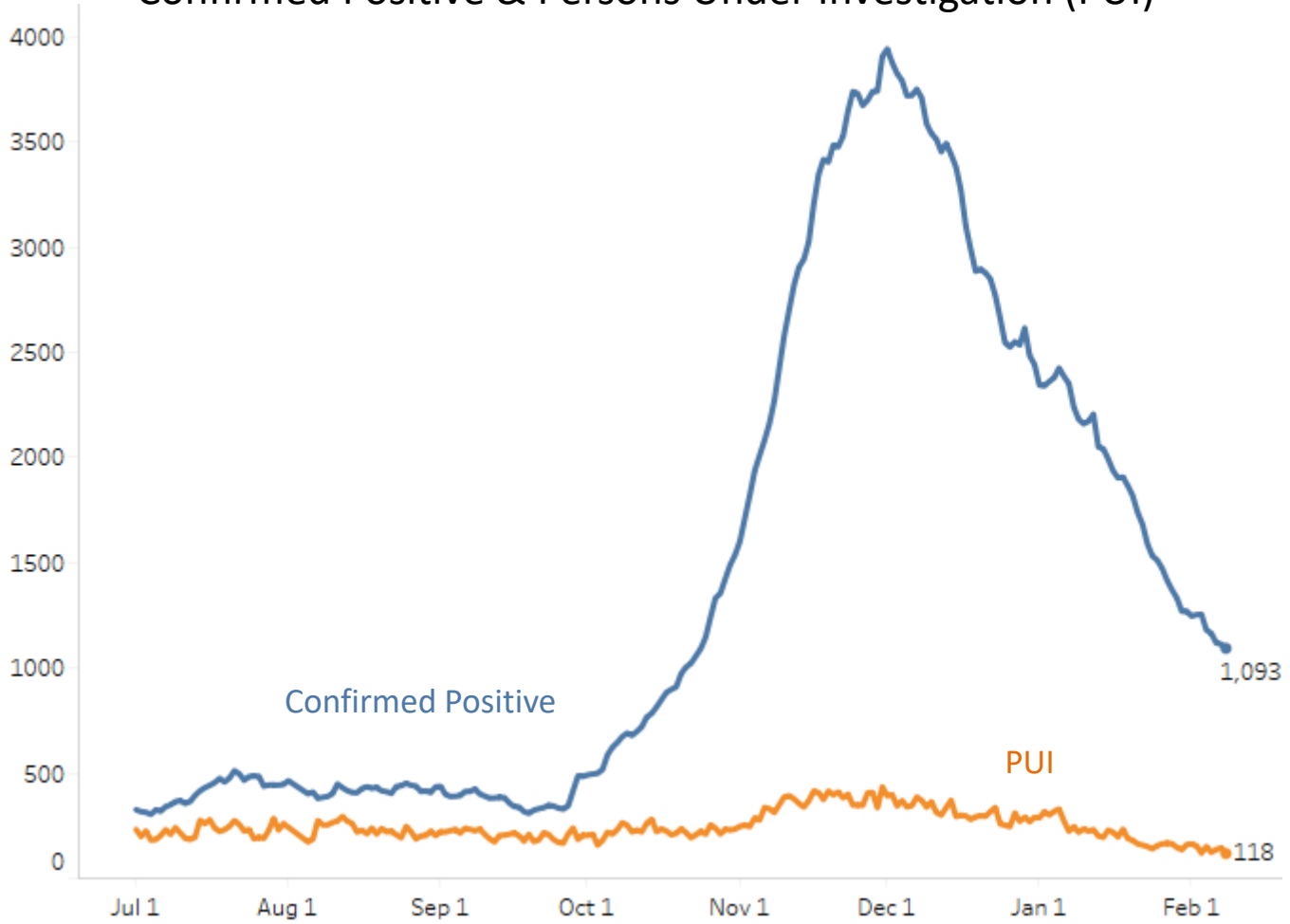
Michigan Trends in Emergency Department Visits for COVID-19-Like Illness (CLI)



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

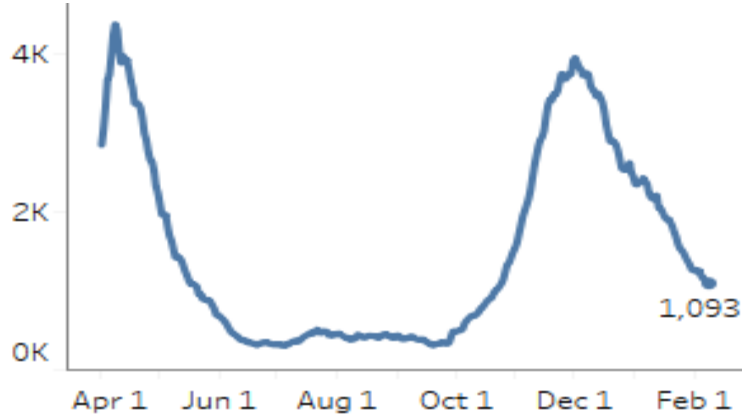
Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 7/1/2020 – 2/8/2021
Confirmed Positive & Persons Under Investigation (PUI)



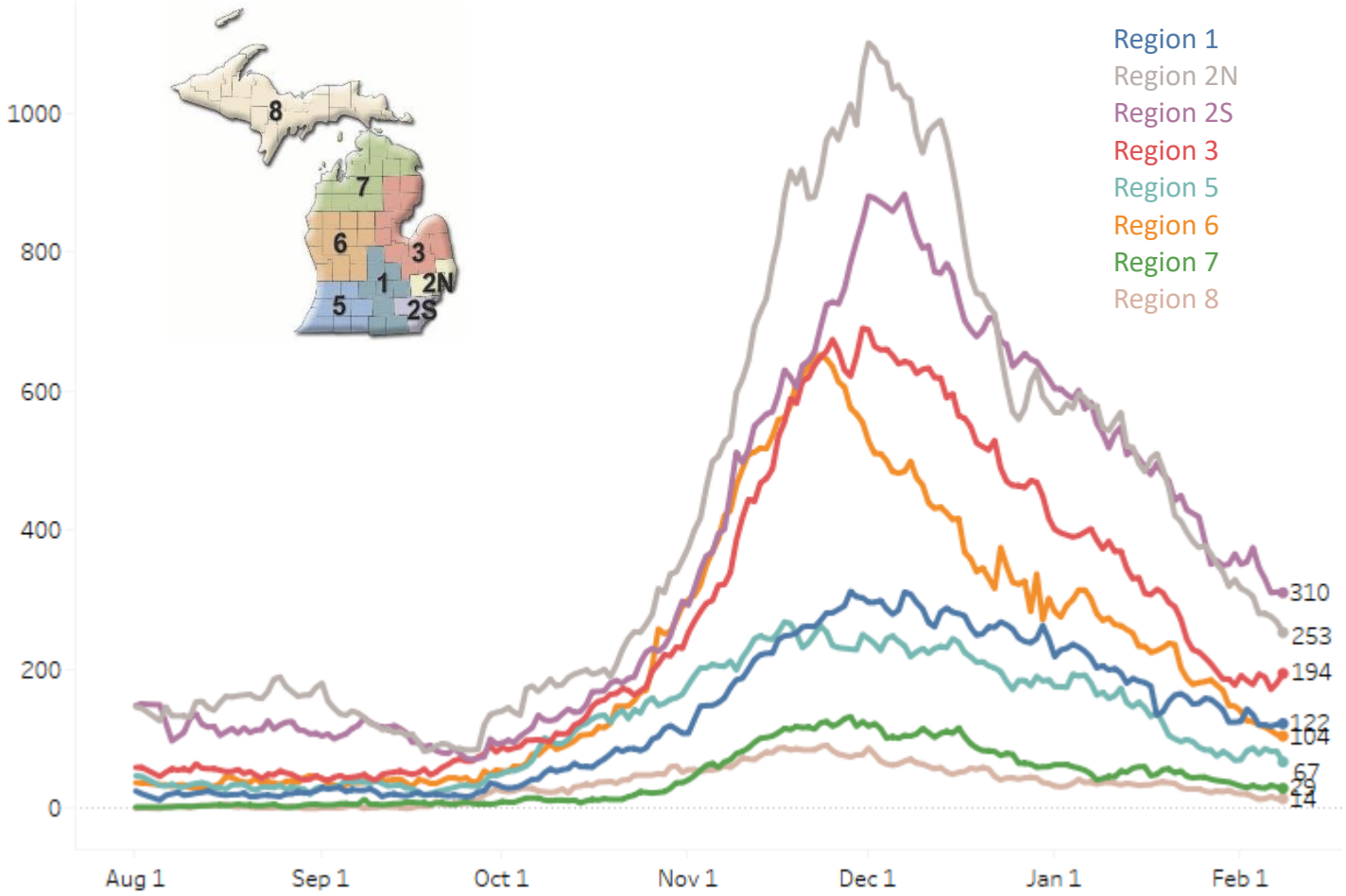
This week, COVID+ census in hospitals is down 12% from the previous week and down 72% from the December 1 peak.

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 8/1/2020 – 2/8/2021
Confirmed Positive by Region



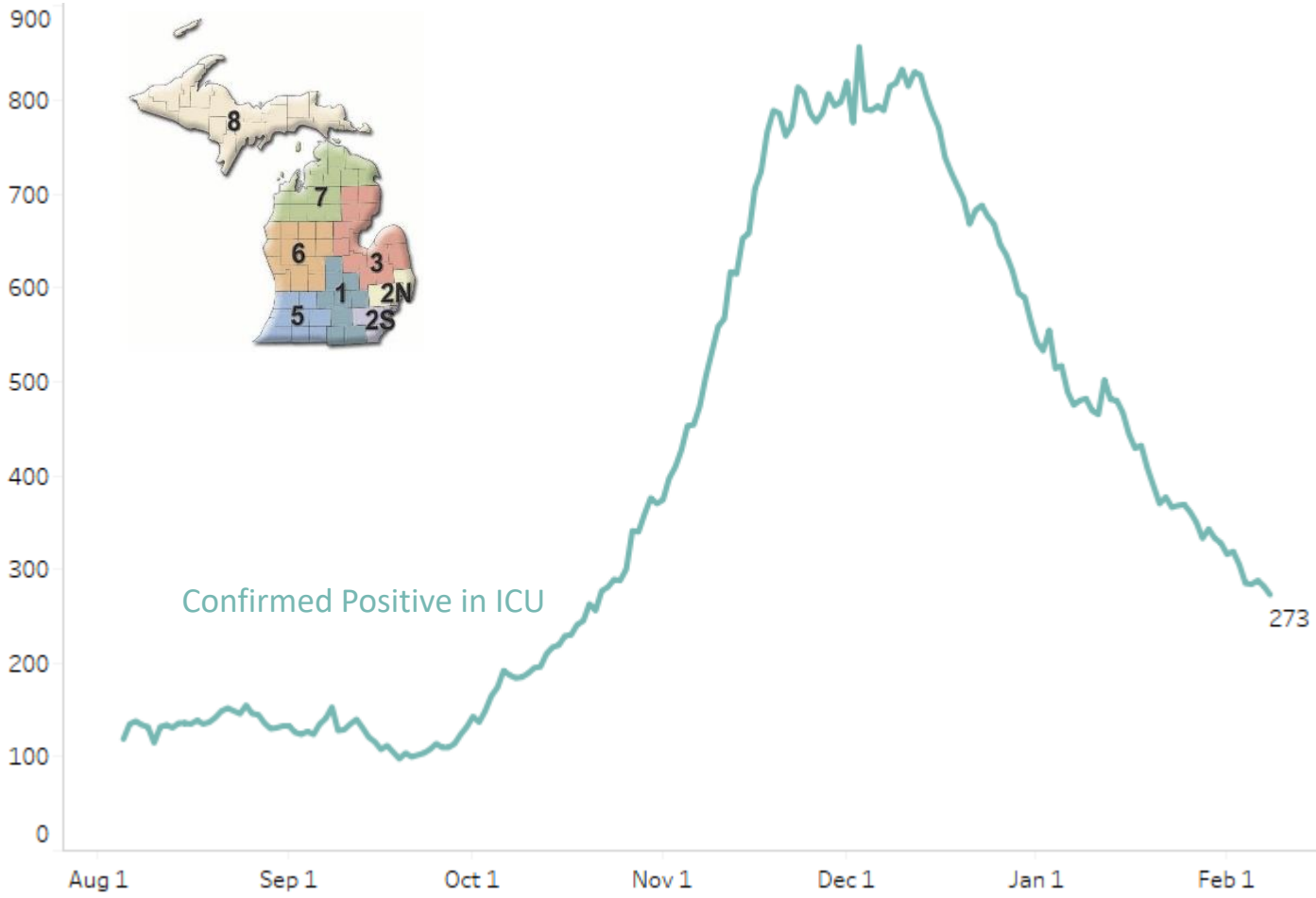
All regions are showing decreasing or flat trends in COVID+ hospitalizations.

All regions are below 200 hospitalized per million of the population and 4/8 are below 100 per million.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	122 (-2%)	113/M
Region 2N	253 (-20%)	114/M
Region 2S	310 (-12%)	139/M
Region 3	194 (+2%)	171/M
Region 5	67 (-4%)	70/M
Region 6	104 (-26%)	71/M
Region 7	29 (-9%)	58/M
Region 8	14 (-33%)	45/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 8/1/2020 – 2/8/2021
Confirmed Positive in ICUs



The census of COVID+ patients in ICUs continue to decline overall, with nearly all regions showing declining trend. Overall, this week is down 14% from the previous.

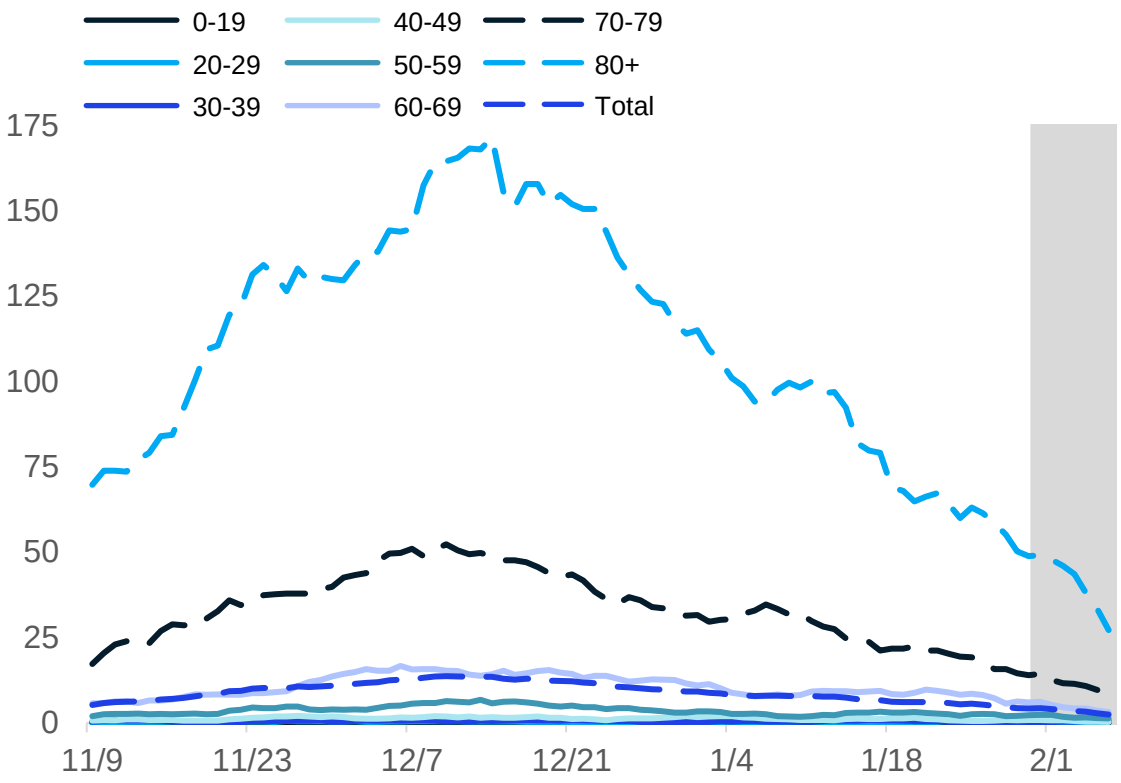
Regions 3 and 8 show increases from last week, but the absolute increase is 4 patients in Region 3 and 2 in Region 8.

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	19 (-32%)	81%	10%
Region 2N	44 (-24%)	74%	8%
Region 2S	76 (-8%)	75%	10%
Region 3	57 (+8%)	85%	16%
Region 5	14 (-36%)	78%	9%
Region 6	36 (-5%)	65%	10%
Region 7	18 (-33%)	60%	10%
Region 8	9 (+29%)	67%	16%

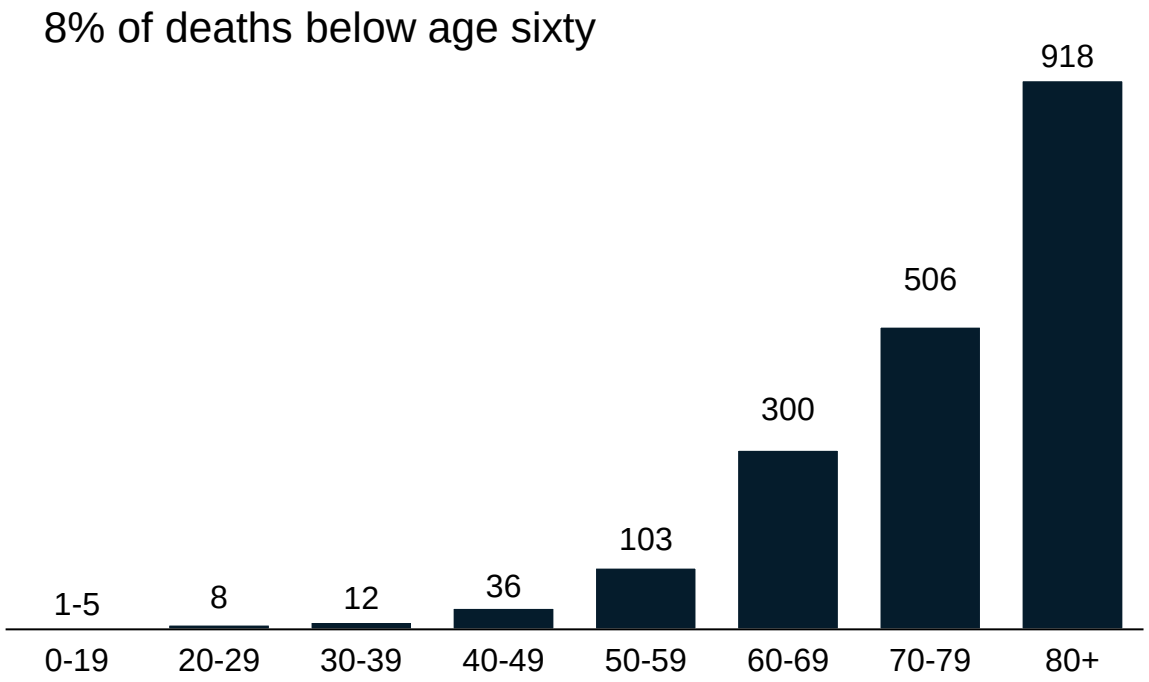
Hospital bed capacity updated as of 2/5

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 1/30/2021)

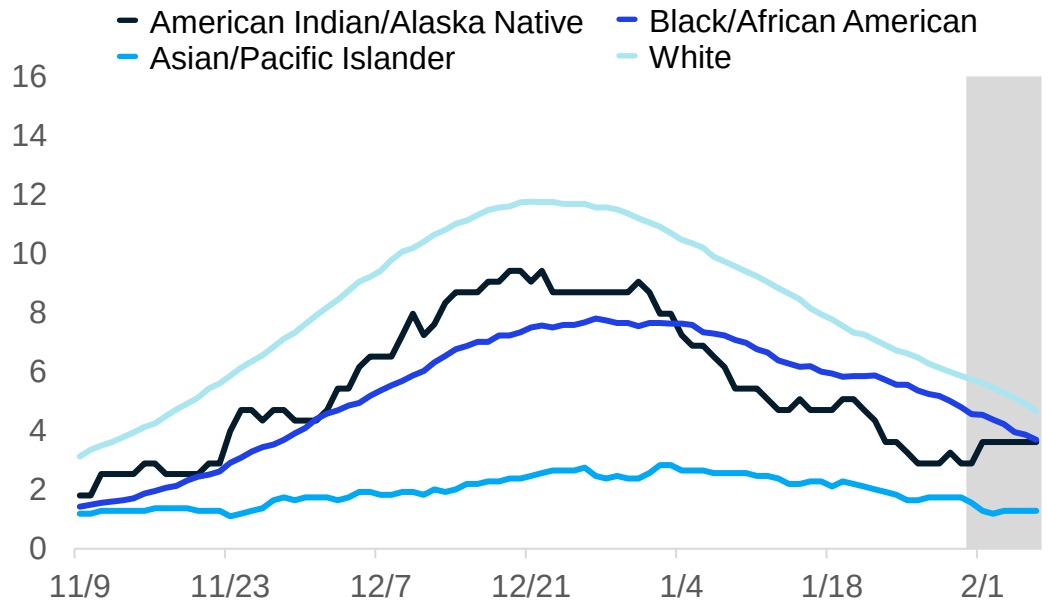


Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.

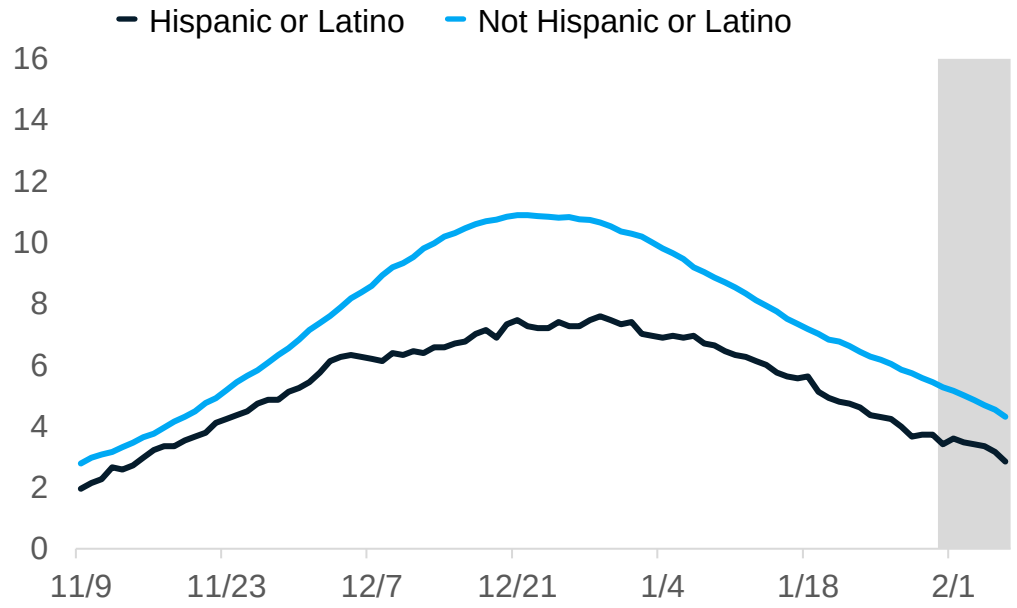
Source: MDHHS – Michigan Disease Surveillance System

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)

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

How is public health capacity?

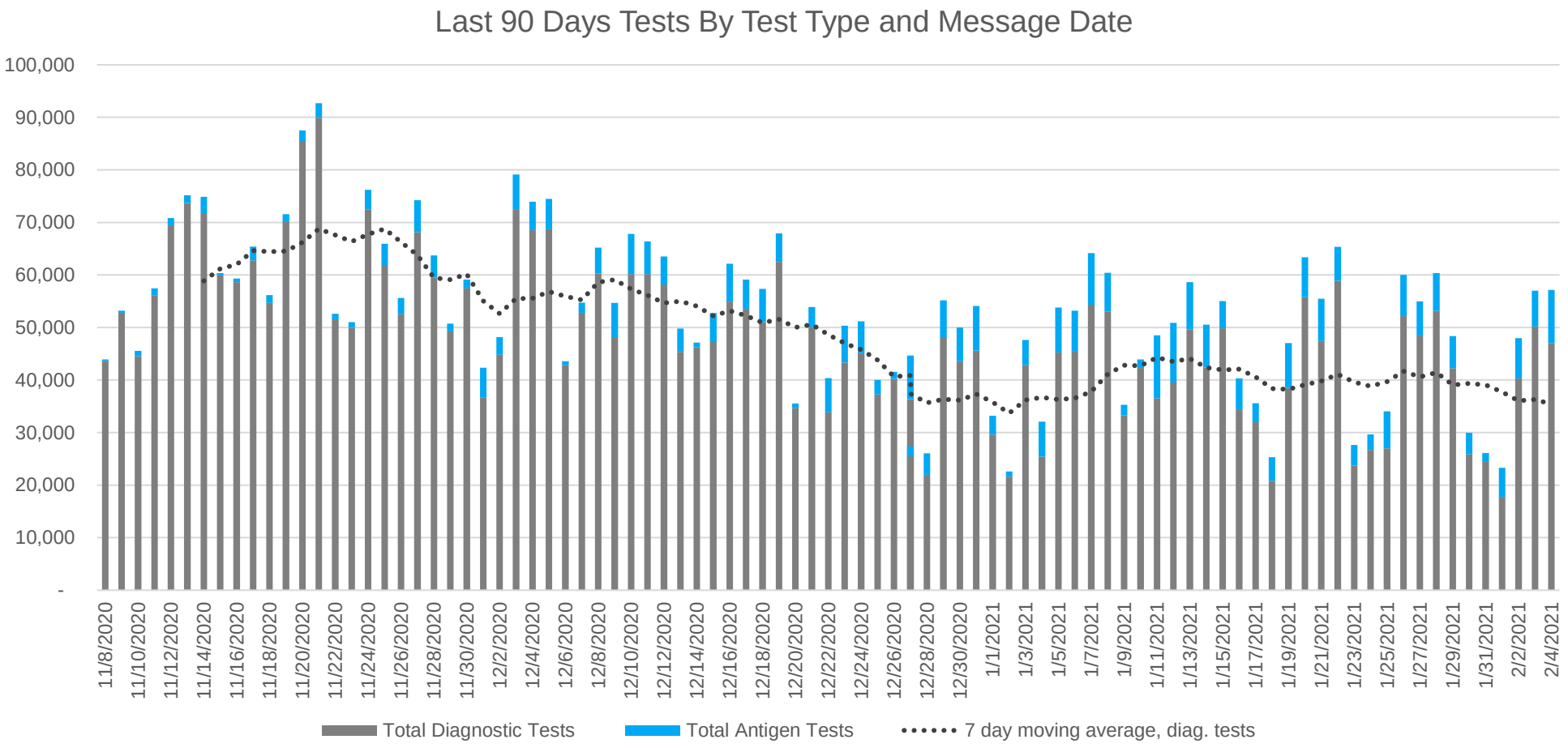
Diagnostic testing volume (PCR and antigen) has decreased from last week to 41,404

- PCR testing has also decrease (35,390)
- 14.5% are antigen tests (6,014)

Cases identified for investigations has plateaued

- Proportion of completed interviews has dropped 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

- 41,404 rolling 7-day average daily diagnostic tests reported to MDHHS (PCR + Ag)
- 35,390 average daily PCR tests
- 14.5% are antigen tests over the past week
- 3.9% positivity in antigen tests

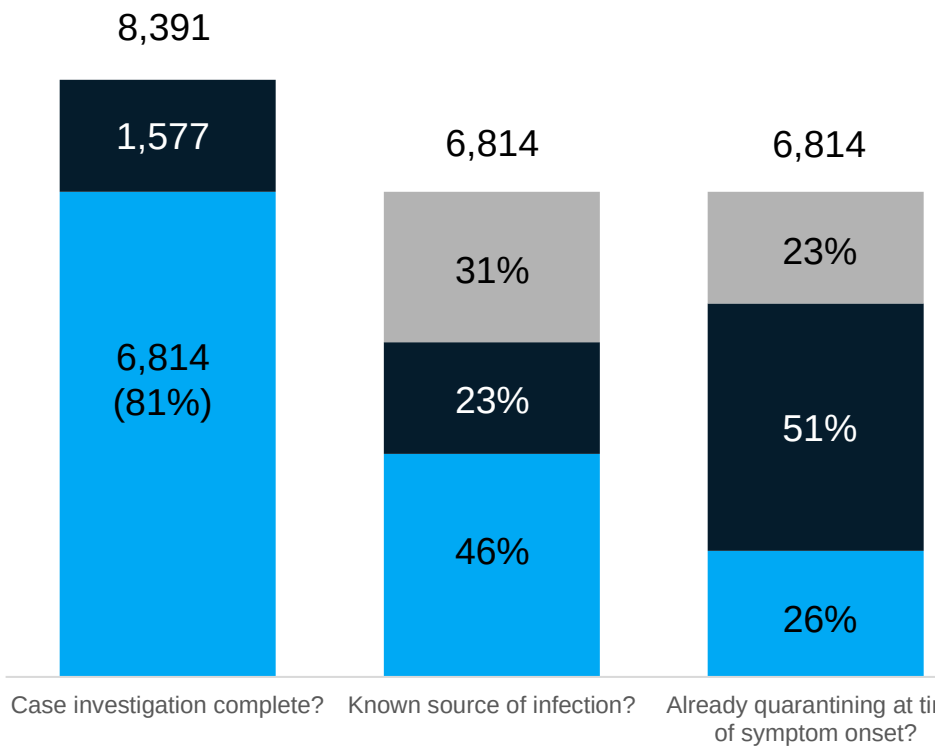
Source: MDSS/Michigan Medical Advantage Group, MDHHS, testing labs

New Case Investigation Metrics (Statewide)

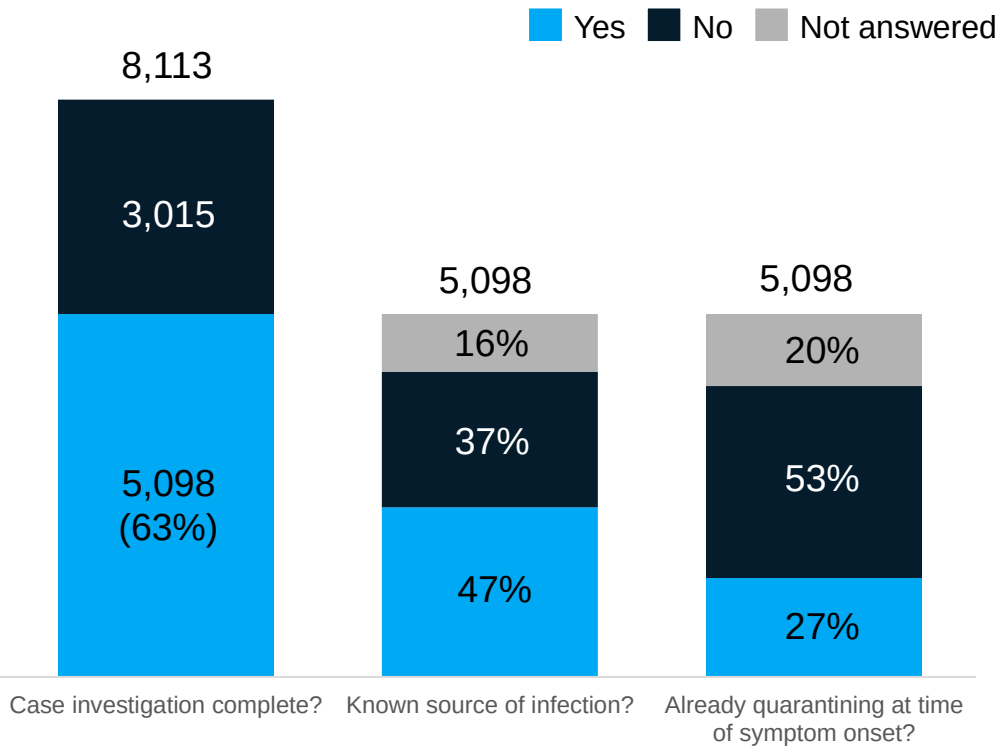
New Communicable Disease metrics slightly increased since last week:

- 47% of investigated cases having a known source (46% last week, 42% week prior)
- 27% of investigated cases noting that they were quarantining before symptoms (26% last week)

01/23-01/29 Case report form information



01/30-02/05 Case report form information



Source: MDHHS – Michigan Disease Surveillance System

COVID-19 Vaccination

- MI is 22nd in nation for doses administered per 100,000 people

- 11.7% of Michiganders have first dose of vaccine (up from 9.8% last week)
  - 22.0% of people 65-74 years and 29% of people over 75
- More than 1.2 million doses reported to MDHHS
  - 342,000 people fully vaccinated
- 35% of all first doses have been administered to people aged 65 and older

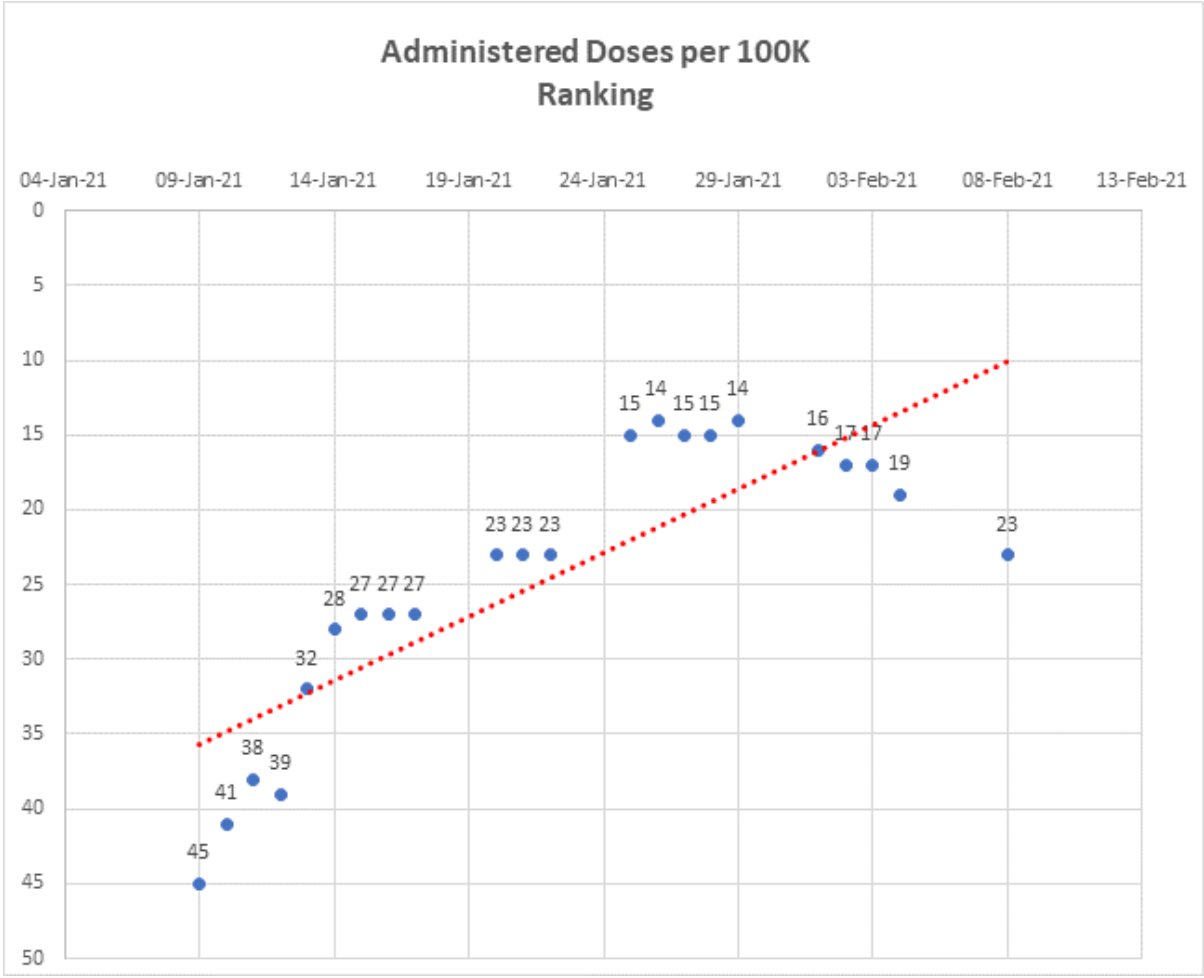
- LTC Federal Pharmacy Partnership:

51% of all long-term care facilities in this partnership have had their 1st first dose clinic (100% of skilled nursing facilities)

- 146,376 residents and staff vaccinated
- Active recruiting of facilities who had been listed as opted out of the program underway.

Michigan COVID Vaccine Distribution & Administration as of 02/08/2021

	State Rank
Total Distributed (Number)	10
Distributed per 100K	34
Total Administered (Number)	8
Administered per 100K*	22
People with One+ Doses (Number)	9
People with One+ Doses per 100k	24
People with Two Doses (Number)	6
People with Two Doses per 100k	18



CDC Ranking Data for the 50 States as of February 8, 2021 at 12:26 pm *States with lower administration rank are: Alaska, West Virginia, North Dakota, New Mexico, Utah, Connecticut, South Dakota, Oklahoma, Vermont, Hawaii, Arkansas, Virginia, Maine, Minnesota, Wyoming, Louisiana, Oregon, Wisconsin, Colorado, Montana, Delaware

Doses Shipped and Administered

	Enrolled Providers	Doses Shipped	Total Doses Administered			1st Dose Coverage, 16+	2nd Dose Coverage, 16+
Data as of	2/7/21	2/8/21	2/7/21	1st Dose	2nd Dose	2/7/21	2/7/21
Michigan Distributed	2,148	1,528,900	1,292,572	950,122	342,450	11.7%	4.2%
Federal Programs		493,350					
Total Distribution		2,022,250					

Vaccination by Age Group (2/7/21 data)

More than 450,024 people aged 65 years or older have received one or more doses of vaccine.

35% of all first doses have been administered to people aged 65 and older

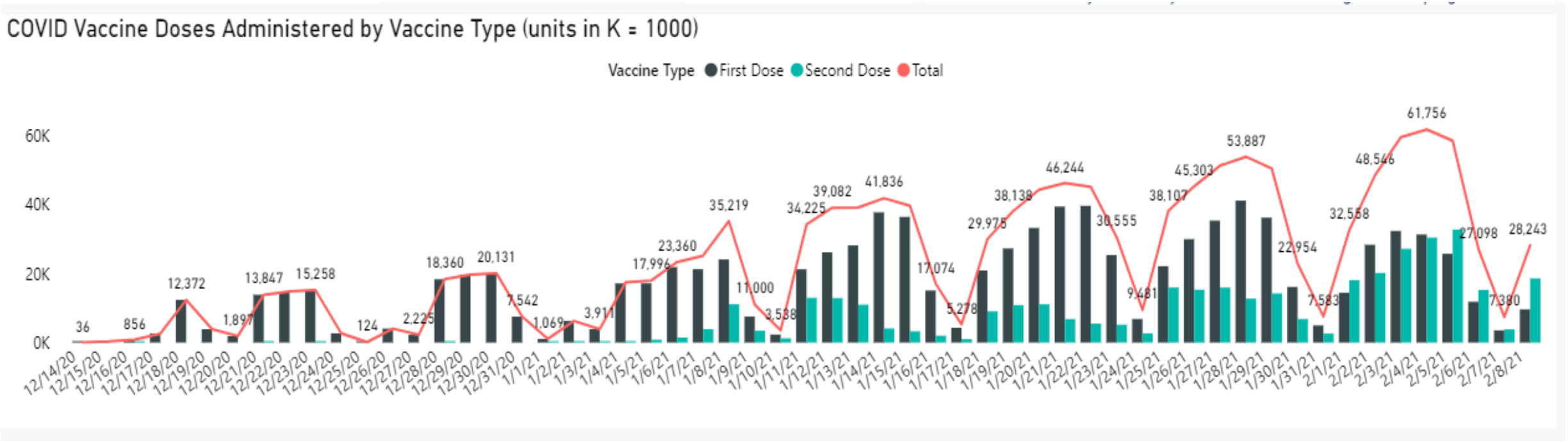
11.7% of Michigan residents have initiated their COVID vaccination series and 4.2% have completed the series with two doses.

Persons 75 years of age and older have the highest initiation coverage (28.9%)

Age Category	People with One or More Doses	People with Two Doses	% of first dose vaccine used by Age Group	% of Age Group with first dose "Initiation"
16-19 years	4,558	1,706	0.4%	0.8%
20-29 years	77,134	41,822	6.0%	5.4%
30-39 years	108,124	61,108	8.4%	8.8%
40-49 years	117,335	59,741	9.1%	9.8%
50-64 years	192,947	94,258	14.9%	9.3%
65-74 years	238,613	50,578	18.5%	22.9%
75+ years	211,411	33,227	16.4%	28.9%

Doses Administered Per Day (2/8/21)

5 days administering more than 50,000 doses/day administered
Second doses increasing



Federal Long-Term Care Facility (LTCF) Pharmacy Partnership Program
Data as of 2/7/21

Pharmacy and Phase	Facilities	1st Clinic Complete	%	2nd Clinic Complete	Residents & Staff Vaccinated	Clinics Next 7 Days
CVS Part A (SNF)	269	269	100%	79%	50,530	0
CVS Part B (Other LTCF)	717	699	97%	15%	32,413	10
Walgreens Part A (SNF)	145	145	100%	59%	23,860	37
Walgreens Part B (Other LTCF)	2,057	1,668	81%		38,089	551
Managed Health Care Assoc (Other LTCF)	1,192	164	14%		1,484	33
Totals	**4,380**	**1,753**	**51%**		**146,376**	**63`**

Science Round Up

- Genomic epidemiology of SARS-CoV-2 and expected frequency of variants
- Genomic sequencing to identify variants
- Public health measures to address SARS-CoV-2 variants
  - Response strategies in Michigan

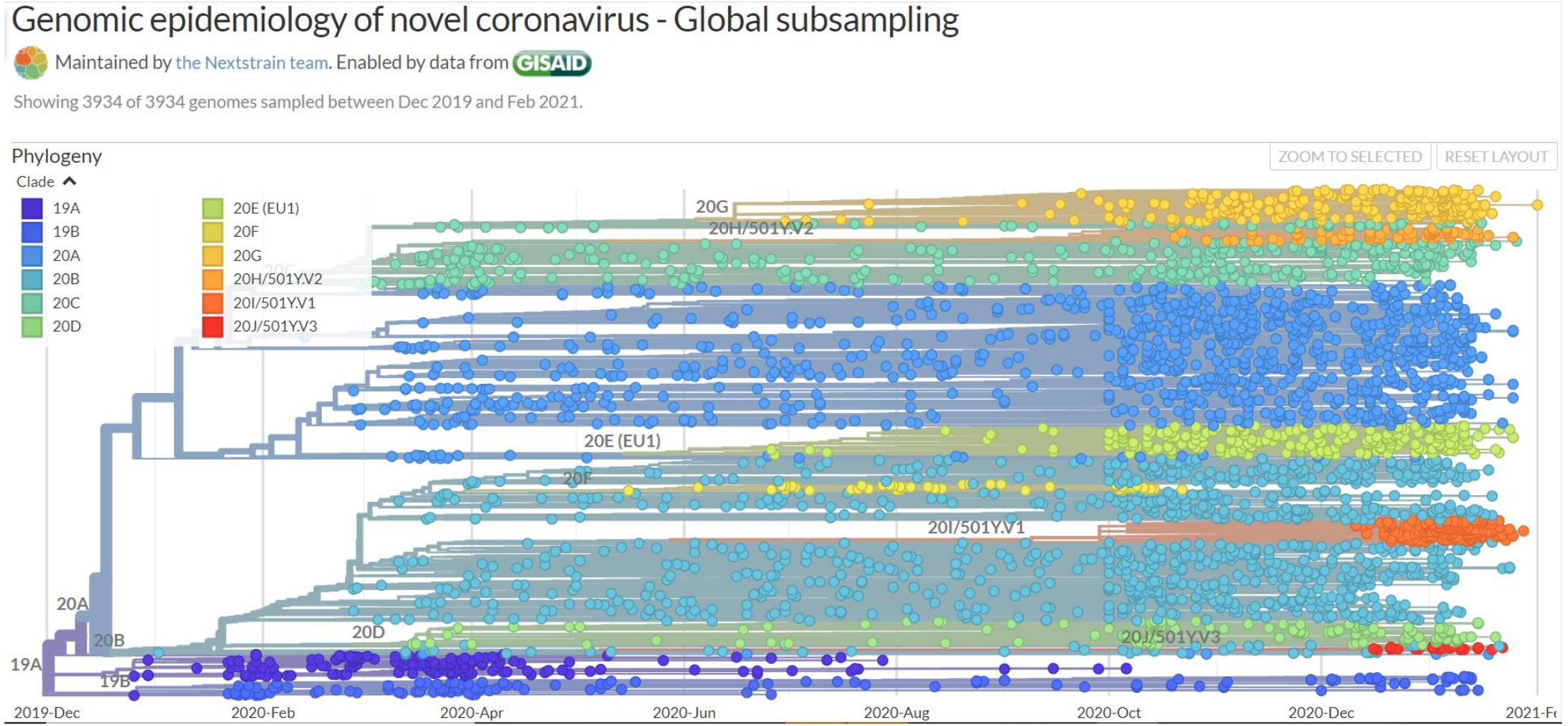
- Update on the development and what to expect with the Johnson & Johnson vaccine

- Second report from the MI CReSS Study which examined health disparities in Michigan

- Standardized Case Fatality Ratio (CFR)
  - CFR is lower than early months of the pandemic
  - Blacks continue to experience the highest CFR of all racial groups
  - CFR has increase for Blacks, Latinos, Asian/Pacific Islanders since summer months
  - Minorities make up larger proportion of the essential workforce and experience greater exposure to SARS-CoV-2

- Mobility in Michigan consistent from previous week (data in appendix)

Variant development is expected.



SARS-CoV-2 has ~24 mutations per year. The spike protein has about 2.9 mutations per year. Comparable to influenza.

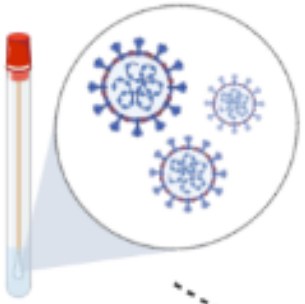
Variants are concerning if they change how the virus works.

Variants of Concern (VOCs) are defined by the CDC

Variant	Area of Identification	Changes
B.1.1.7	UK	• Spreads 50% faster • Under evaluation: More severe (?)
B.1.351	South Africa	• Under evaluation: Spreads faster • Under evaluation: Possibly lower vaccine effectiveness
P.1	Brazil	• Under evaluation: Spreads faster • Under evaluation: Possibly more reinfections or reduced vaccine effectiveness

How do we test for the variant?

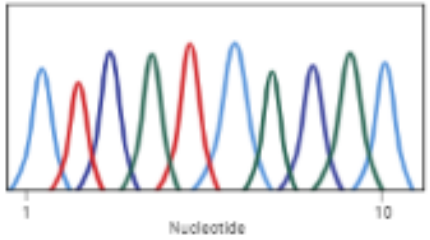
1. Test someone for SARS-CoV-2 by rapid test (1 day) or PCR (2-3 days).



2. Positive specimen is sequenced in a central lab.

Data analyzed to confirm variant.

3 - 5 days



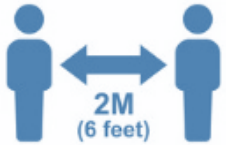
B.1.1.7 only Specimen can be screened by a specific PCR to look for a preliminary pattern

"S dropout" or "SGTF".

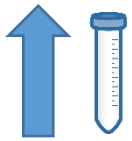
1-2 days

Variant response strategies

Physical barriers still work (masks, plexi-glass dividers).



Distance, reducing gatherings still prevents transmission.



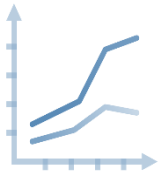
Increased testing will identify positive individuals sooner.

Strategies in Michigan in areas with variant spread:

- 14-day quarantine Increase testing in larger rings of contacts
- Increase testing following travel to Michigan

More sequencing throughout Michigan

New Vaccine Under Review: Johnson & Johnson



Vaccine efficacy is 66% overall after 28 days.
(72% in US trial, 57% in S. Africa trial. *No hospitalizations, deaths*).

Excellent safety profile. (No anaphylaxis events. 0.3% had higher fever. Serious events higher in the placebo group).

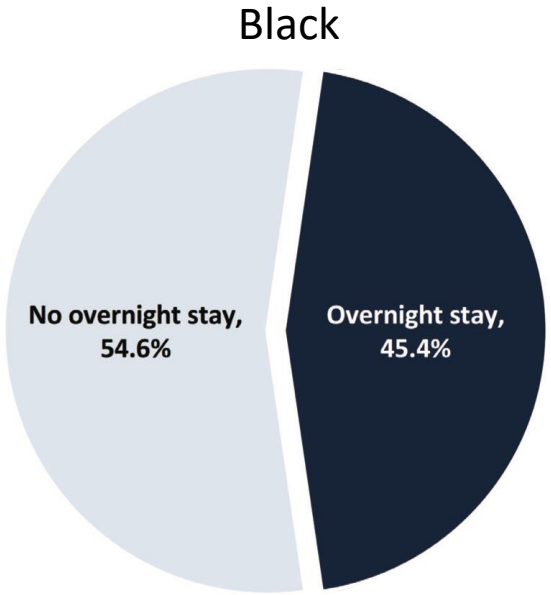
Adenovirus vector vaccine (The same as the Ebola vaccine).

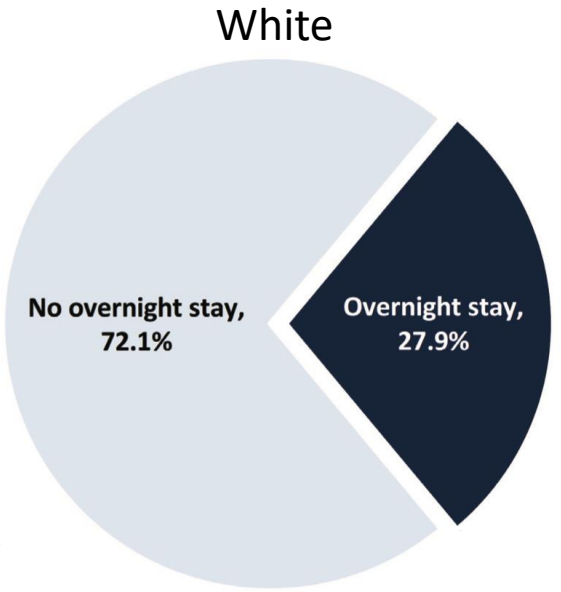
One dose vaccine – More people fully covered, faster.

nytimes.com

MI CReSS Study examined health disparities in Michigan

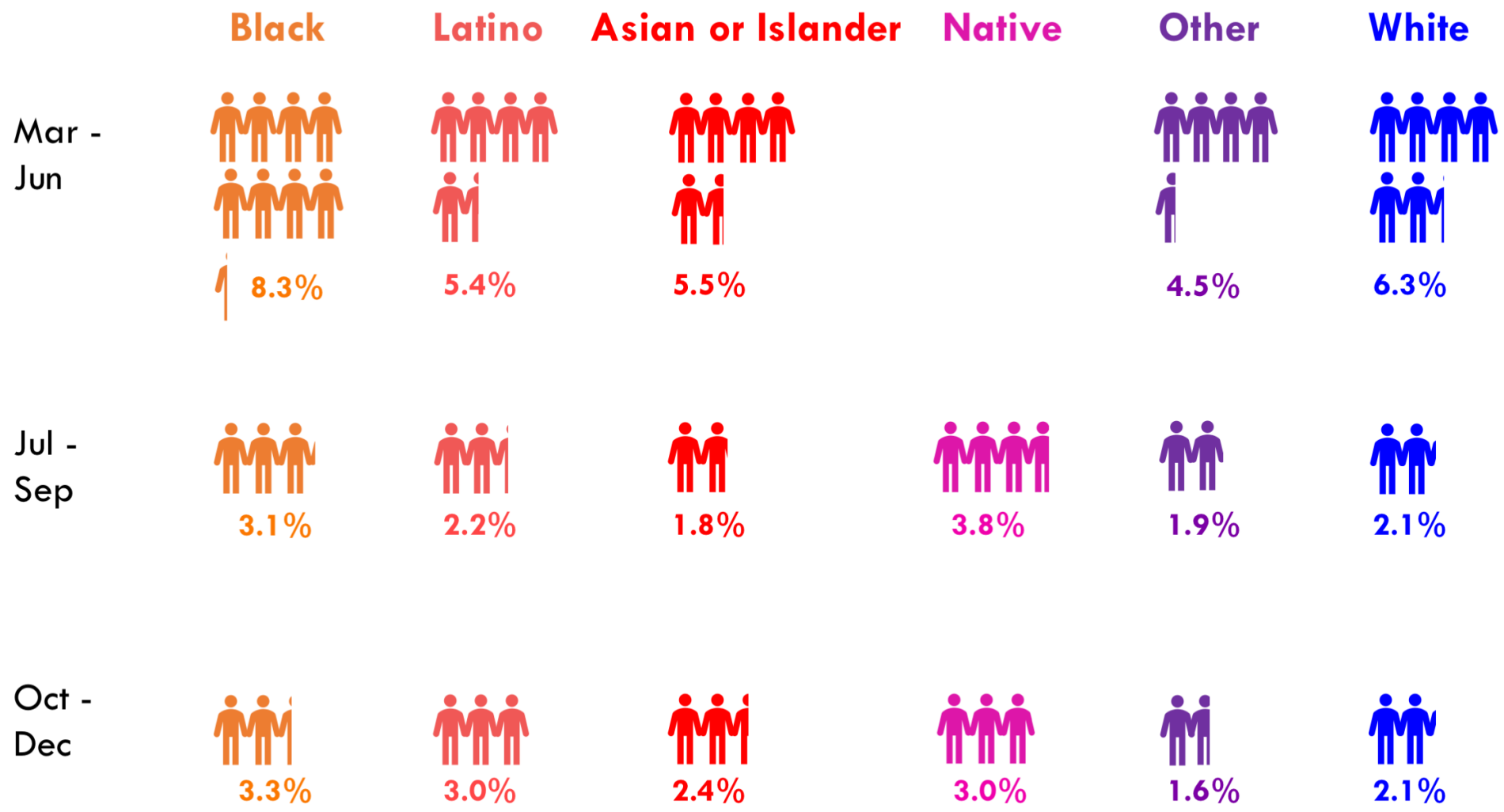
Symptom Severity	Access to Care	Social Stressors	Social Stigma
More Black than White respondents reported severe or very severe symptoms (72.9% vs. 60.5%) or required an overnight hospital stay (45.4% vs. 27.9%)	Black respondents reported poorer experiences than White respondents when attempting to access COVID-19 care	More Black respondents reported increased social stressors, with 25.6% being unable to pay bills (vs. 10.3% of White respondents)	More Black respondents (23.0%) were afraid to disclose their COVID-19 status to their friends or family than White respondents (9.8%)





637 participants from the initial sample of 2000 adults in Michigan with COVID-19 onset on or before April 15, 2020, of whom 46.4% were White and 34.8% were Black. Responses were weighted to be representative of Michigan population with respect to region, age, and sex.
Source: https://sph.umich.edu/mi-cress/index.html

What was the standardized Case Fatality Ratio (CFR) by race in the first wave of the Pandemic (March-June), the second wave (July-September), and now (October-December)?

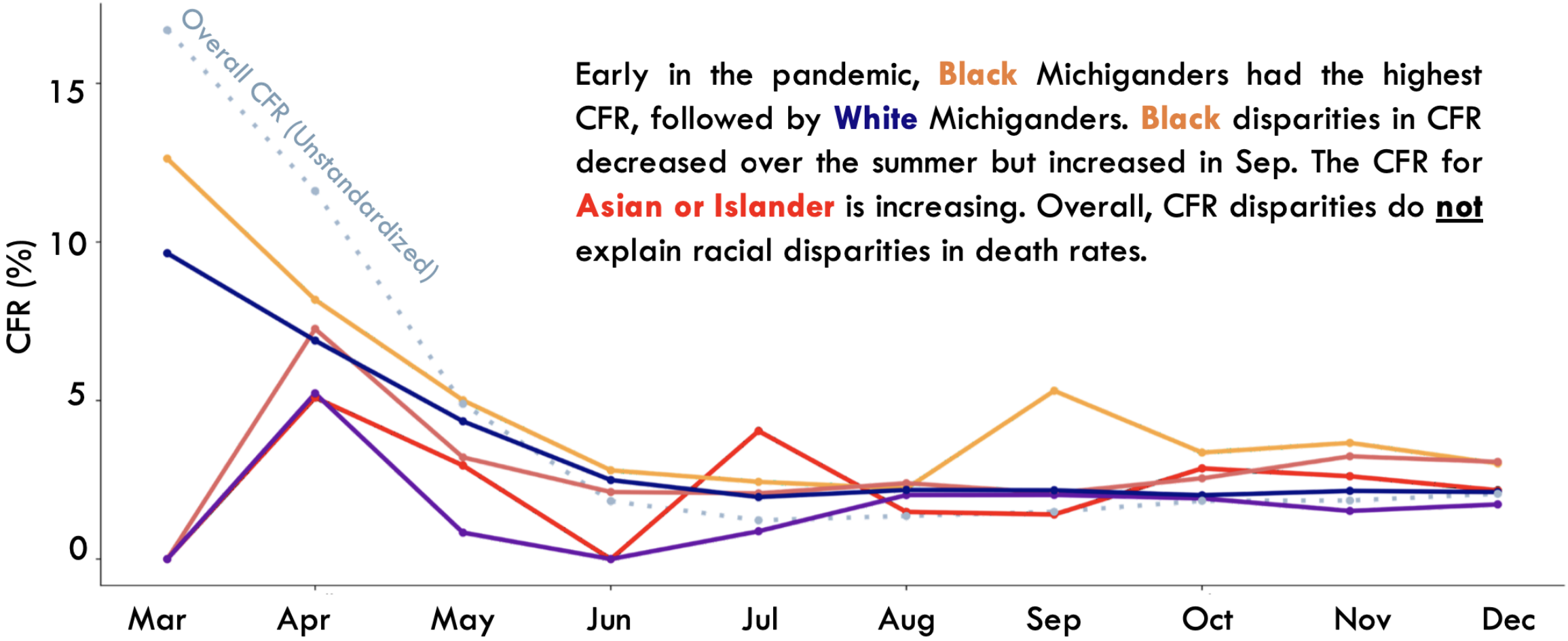


Broken out by race, how many COVID-19 patients died, per 100, in each of these pandemic time periods?

CFR is lower now for all races, but is still highest among Black residents

Certain races more likely to die of COVID-19 if they get sick, but this effect does not explain observed disparities in fatality rates

Age & Sex Standardized Case Fatality Ratio (CFR) of COVID-19 Patients in MI by Race/Ethnicity



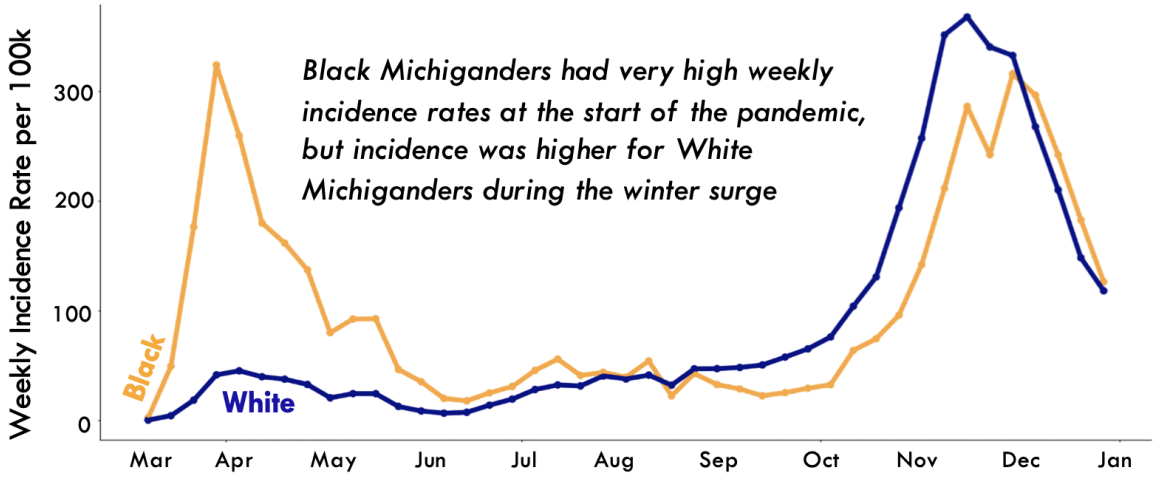
Early in the pandemic, **Black** Michiganders had the highest CFR, followed by **White** Michiganders. **Black** disparities in CFR decreased over the summer but increased in Sep. The CFR for **Asian or Islander** is increasing. Overall, CFR disparities do **not** explain racial disparities in death rates.

Data from MDHHS March 8 – Dec 31, 2020

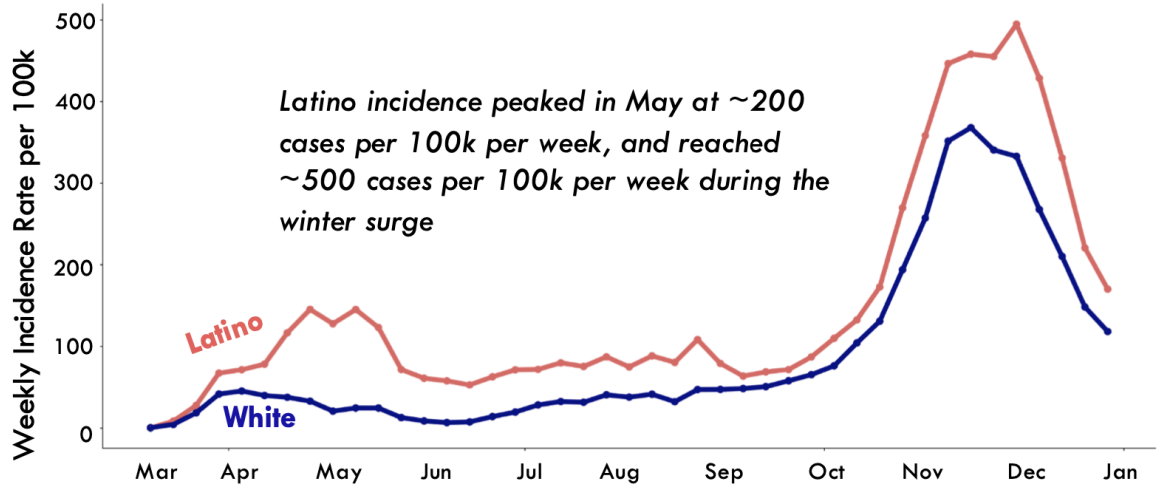
PUBLIC HEALTH

Racial disparities in incidence rates explain observed disparities in COVID-19 fatality: People of color experience more fatality with increased exposure

Standardized Weekly Incidence of Black & White COVID-19 Patients in MI



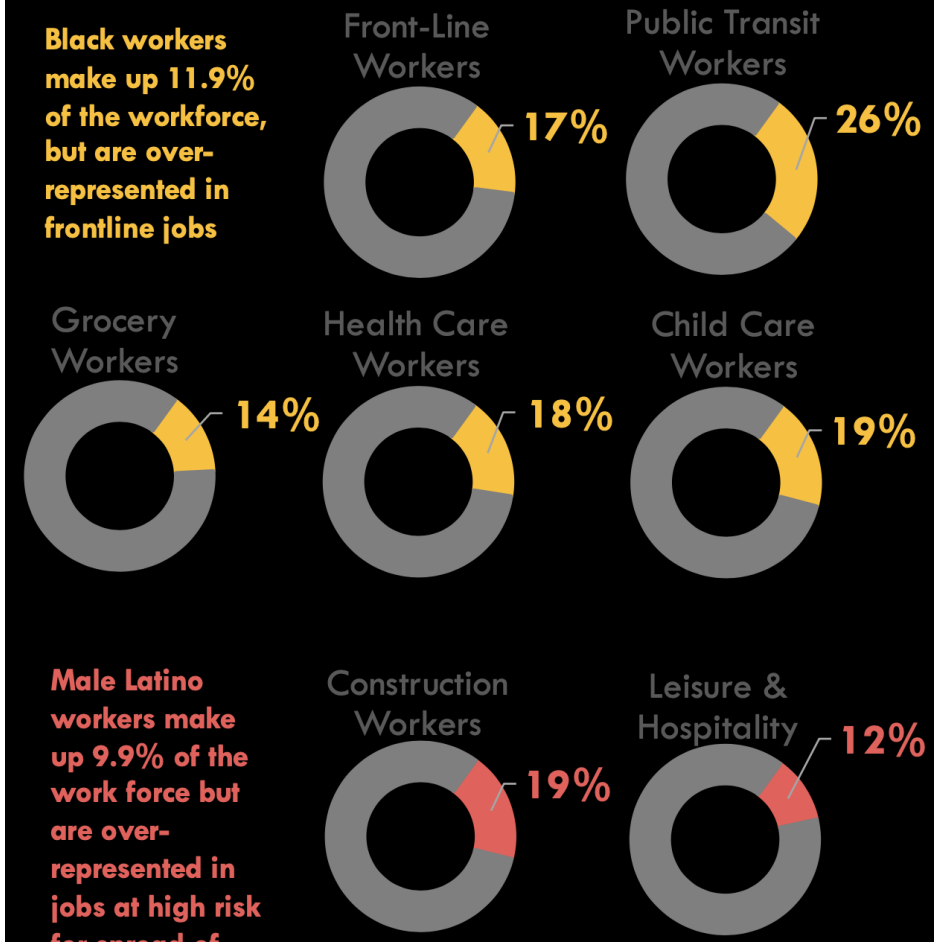
Standardized Weekly Incidence of Latino & White COVID-19 Patients in MI



Data from MDHHS, US Census

Minorities face a greater burden of essential jobs, putting them at higher risk of acquiring COVID

Black workers make up 11.9% of the workforce, but are over-represented in frontline jobs



Data from Economic Policy Institute

PUBLIC HEALTH