MI COVID RESPONSE DATA AND MODELING UPDATE

NOTE: All data as of Jan. 23 unless otherwise noted

January 26, 2021

Executive summary

Michigan has the **23rd highest number of cases (↔)** , **14th highest number of deaths (↔)**, **49th highest case rate (↓3)**, and **T29th highest death rate (↓6)** in the last 7 days (source: CDC COVID Data Tracker)

Michigan has the **35th highest hospitalization rate as a percent of total beds (↓1)**, and **17th highest number of COVID patients in the ICU (↓1)** (source: Becker's Hospital Review)

Case rates (203.0, ↓84.5) and **percent positivity** (6.2%, ↓1.4%) are both decreasing for about two weeks

9.2% of available inpatient beds are filled with COVID patients (↓1.5%) and state trends for COVID hospitalizations are decreasing

There were **433 deaths** (↓47) between Jan 10 and Jan 16, and death rate is 6.2 deaths per million residents (↓0.7)

Daily diagnostic tests decreased to an average of 36.7K per day (↓4.7K) over the last week and the state rate is 3,653.4 tests/million/day (↓319.5)

760,066 **COVID-19 vaccine** doses reported to MDHHS, 7.8% of population has at least one dose

Science updates describe the benefits of holiday mitigation measures to prevent cases

Comparison across states: Summary 1/25/21

What we see today:

- 1 state (NE) seeing increasing 1 week case trends (down vs. 5 last week)
- 44 states (down vs. 46) with significant outbreaks (high/increasing cases, increasing/high positivity increasing/high hospitalizations over 2 weeks (>100 per M))
- Arizona (594/M), Georgia, Nevada, California, Alabama have highest per capita hospitalized patient numbers
- Midwest:
  - Wisconsin showing slight drop in hospitalizations (131/M), moderate drop in cases (337/M)
  - Indiana with decline in hospitalizations (315/M), and drop in cases (456/M)
  - Illinois showing slow decline in hospitalizations (236/M), cases dropping (460/M)
  - Ohio with declining hospitalizations (256/M) and drop in cases (382M)
  - Michigan showing continued decline in hospitalizations (151/M) and decline in cases (214/M)

COVID-19 Spread

Statewide positivity has decreased to 6.2%, and is decreasing in all MERC regions

- All MERC regions now below 10% (Risk Level B),
- One region, Upper Peninsula, is below 7% (Risk Level A)
- Majority of counties (70) have positivity below 10%

Case rates have steadily declined to 203.0 cases per million (Risk Level E)

- 72% 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 race and ethnicity missing
- Variant is in Michigan: increased vigilance in use of masks and social distancing and increase testing
  - 293 cases with the B.1.1.7 variant have been identified in the US, 19 in Michigan

Number of active outbreaks is down 6% from previous week

- However, reported school outbreaks have increased since last week (40 to 54) with outbreaks increasing in all settings

Confirmed and probable case indicators

Table Date: 1/23/2021 (7 days from date table was produced: 1/16/2021)

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	179.6	decline [13 days]	6.2	Decrease - 2wk	3321.5	0.4	Decrease - 1wk	9.1	5.3	Decrease - 4wk
Grand Rapids	2	6	E	213.7	decline [13 days]	6.2	Decrease - 2wk	3748.6	0.7	Decrease - 2wk	8.4	5.3	Increase - 1wk
Kalamazoo	3	5	E	257.7	decline [12 days]	7.6	Decrease - 2wk	3878.6	0.6	Decrease - 3wk	8.9	6.1	Decrease - 4wk
Saginaw	4	3	E	216.7	decline [65 days]	6.4	Decrease - 2wk	3694.9	0.4	Increase - 1wk	10.7	12.8	Increase - 1wk
Lansing	5	1	E	251.8	decline [14 days]	7.5	Decrease - 2wk	3123.9	0.3	Increase - 1wk	14.3	9.3	Increase - 1wk
Traverse City	6	7	E	194.1	decline [12 days]	6.2	Decrease - 1wk	2874.4	1.0	Increase - 1wk	5.8	6.5	Decrease - 3wk
Jackson	7	1	E	264.8	decline [12 days]	7.9	Decrease - 2wk	4106.0	0.4	Increase - 1wk	10.1	6.1	<20 wkly deaths
Upper Peninsula	8	8	E	210.2	decline [13 days]	3.3	Decrease - 2wk	4520.3	0.6	Increase - 1wk	6.9	6.6	<20 wkly deaths
Michigan			E	203.0	decline [13 days]	6.2	Decrease - 2wk	3653.4	0.5	Decrease - 8wk	9.2	6.2	Decrease - 5wk

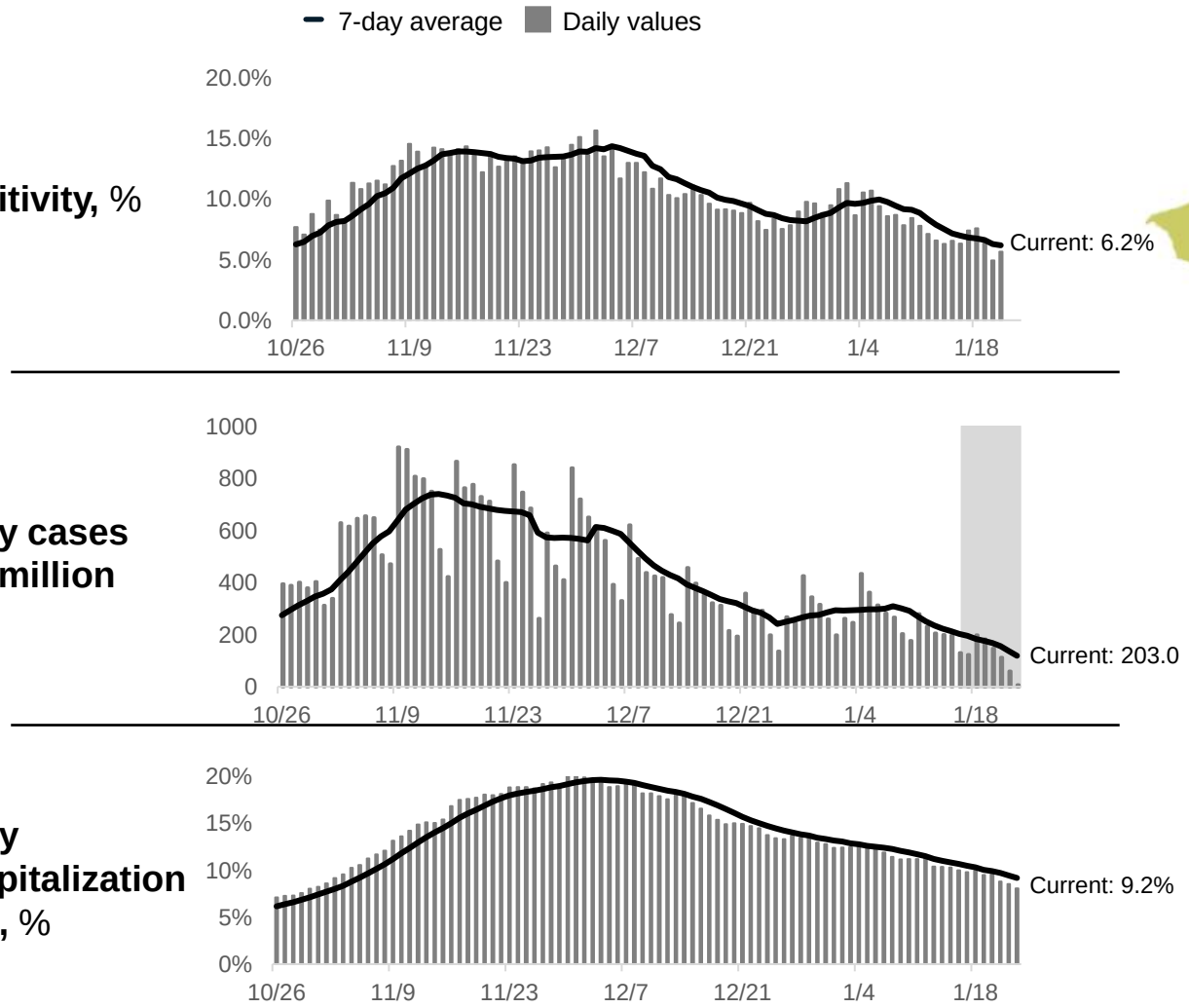
Cases Low: <7 | A: 7-20 | B: 20-40 | C: 40-70 | D: 70-150 | E: >=150

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

PUBLIC HEALTH

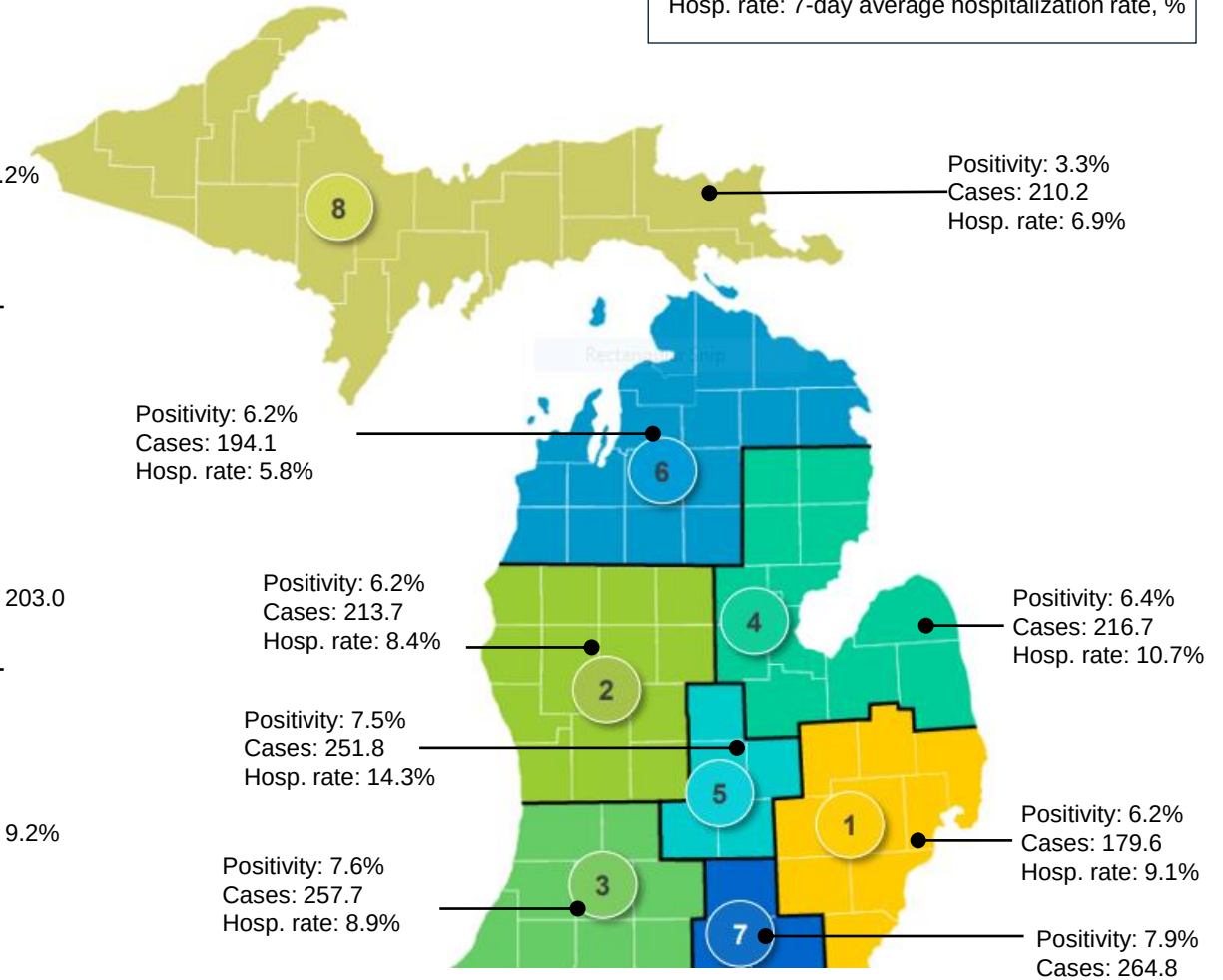
Recent statewide trends

Statewide trends



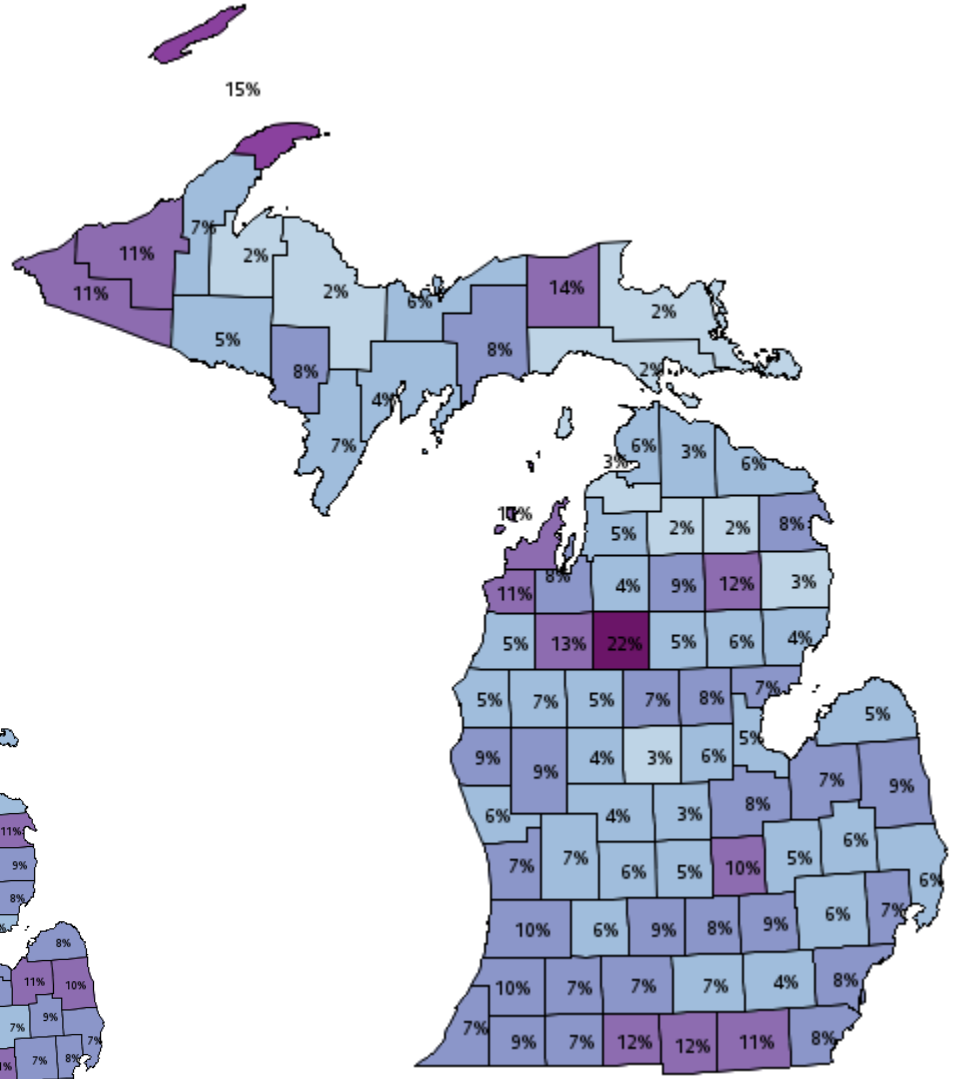
Regional breakdown: Cases, hospitalization rate, and positivity

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

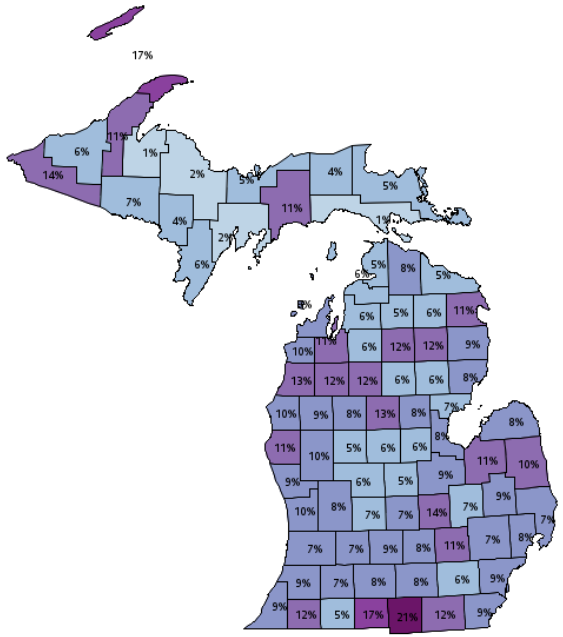


Source: https://mistartmap.info/

Positivity by county, 1/15-1/21



Last week, 1/8-1/14



Average positivity per day	# of counties	
		This week / Last week*
<3%	9	4
3-7%	34	26
7-10%	27	21
10-15%	11	18
15-20%	1	2
>=20%	1	1

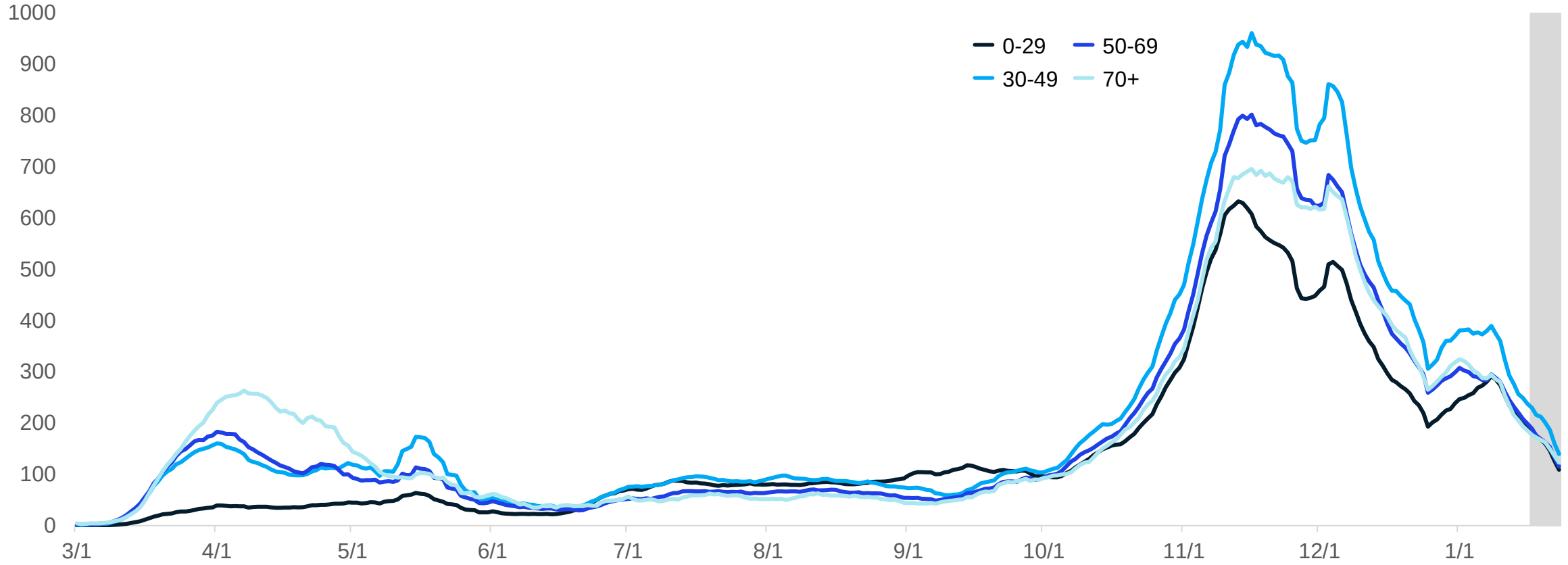
Updates since last week:

13 of 83 counties saw double digit positivity 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)

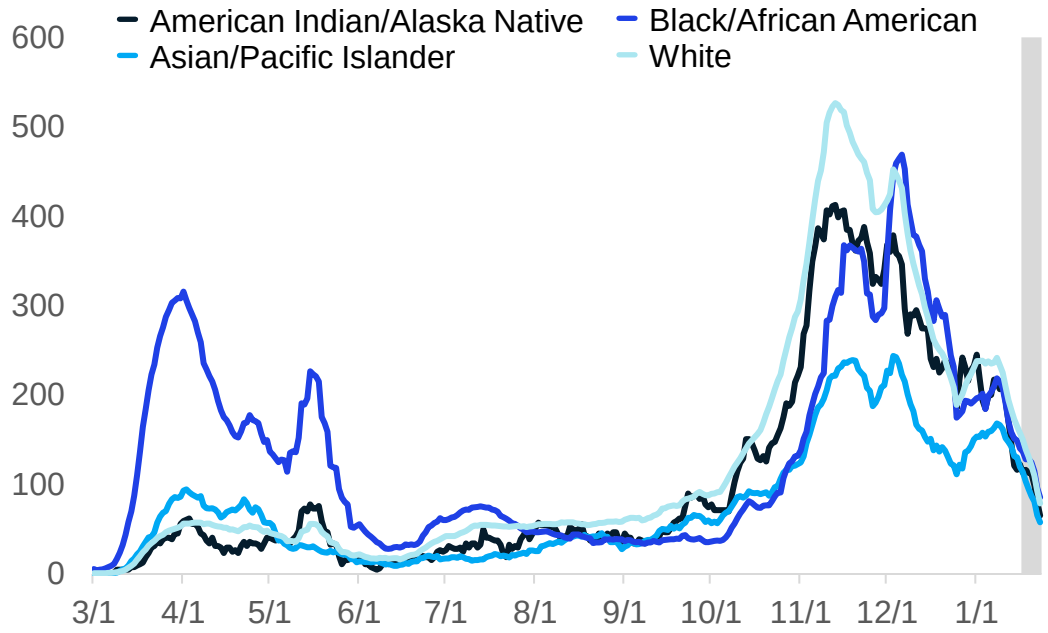


- 30-49 age group continues to have the highest cases per million
- All age groups are now decreasing

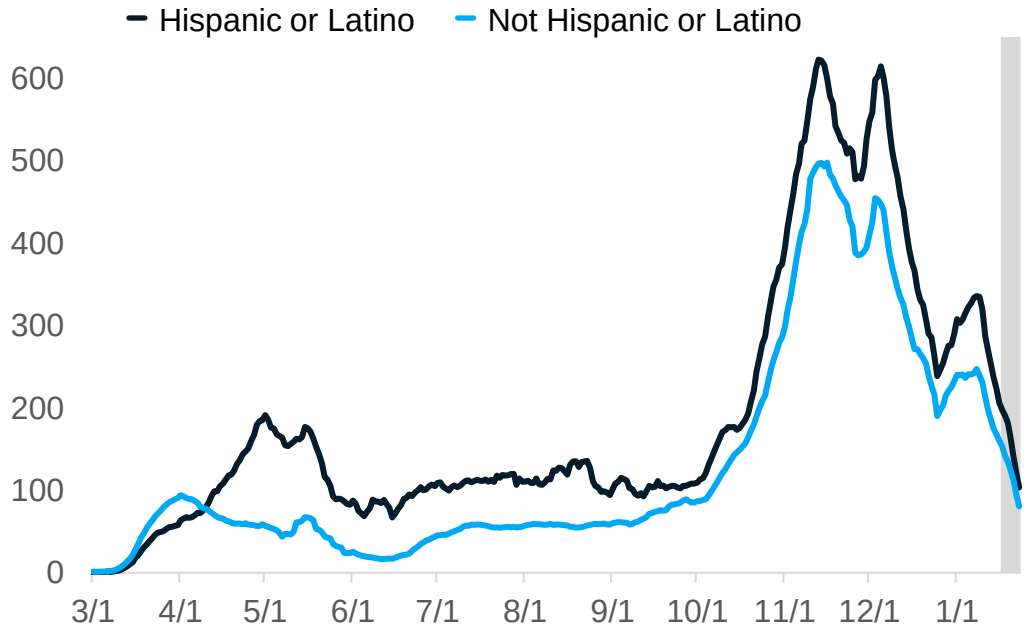
Note: Cases information sourced from MDHHS and reflects date of onset of symptoms
Source: MDHHS – Michigan Disease Surveillance System

Average daily new cases per million people by race 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



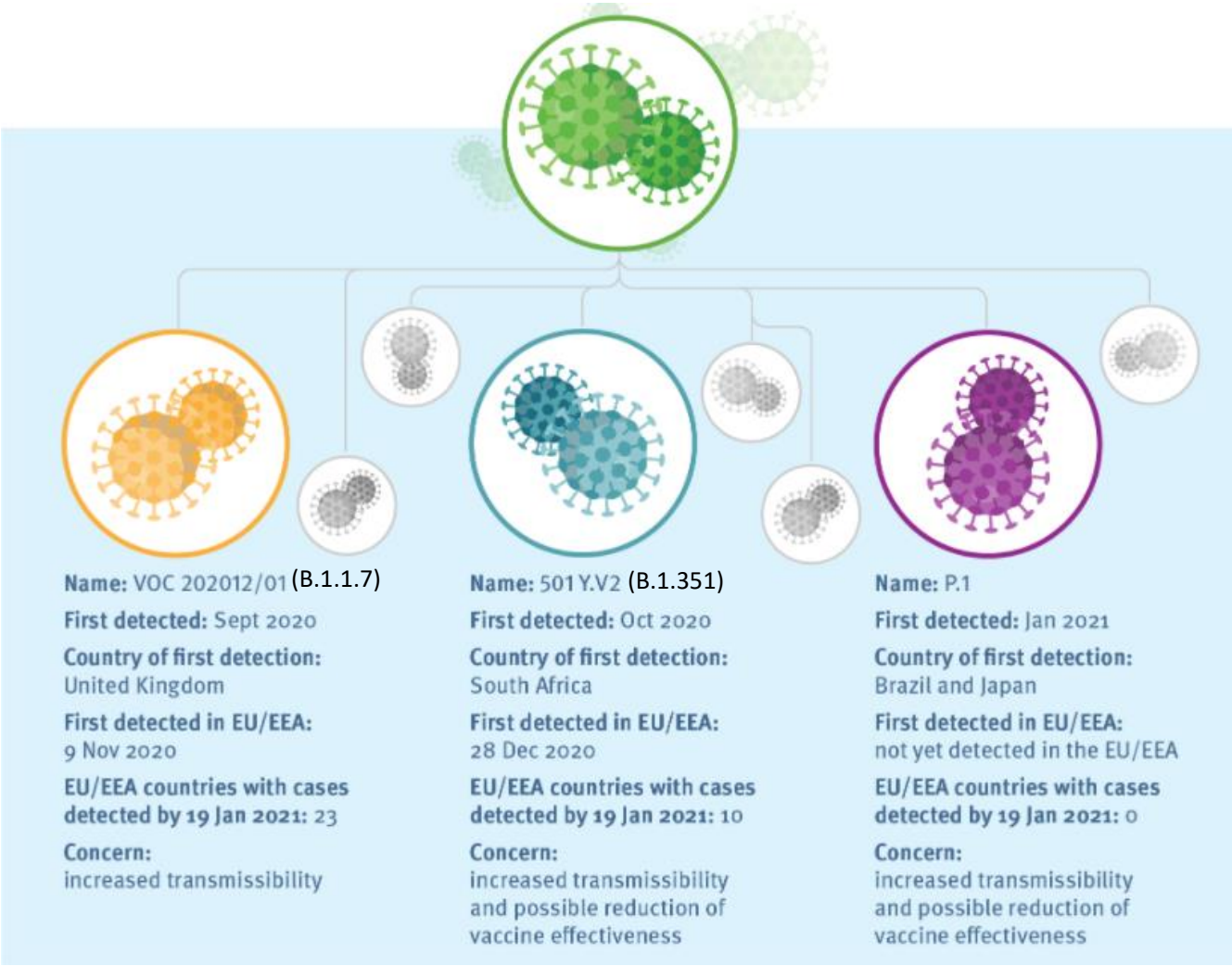
Updates since last week:

- 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, 26% of all cases represent unknown, multiple, or other races
- In the past 30 days, 21% of all cases have an unknown ethnicity reported

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

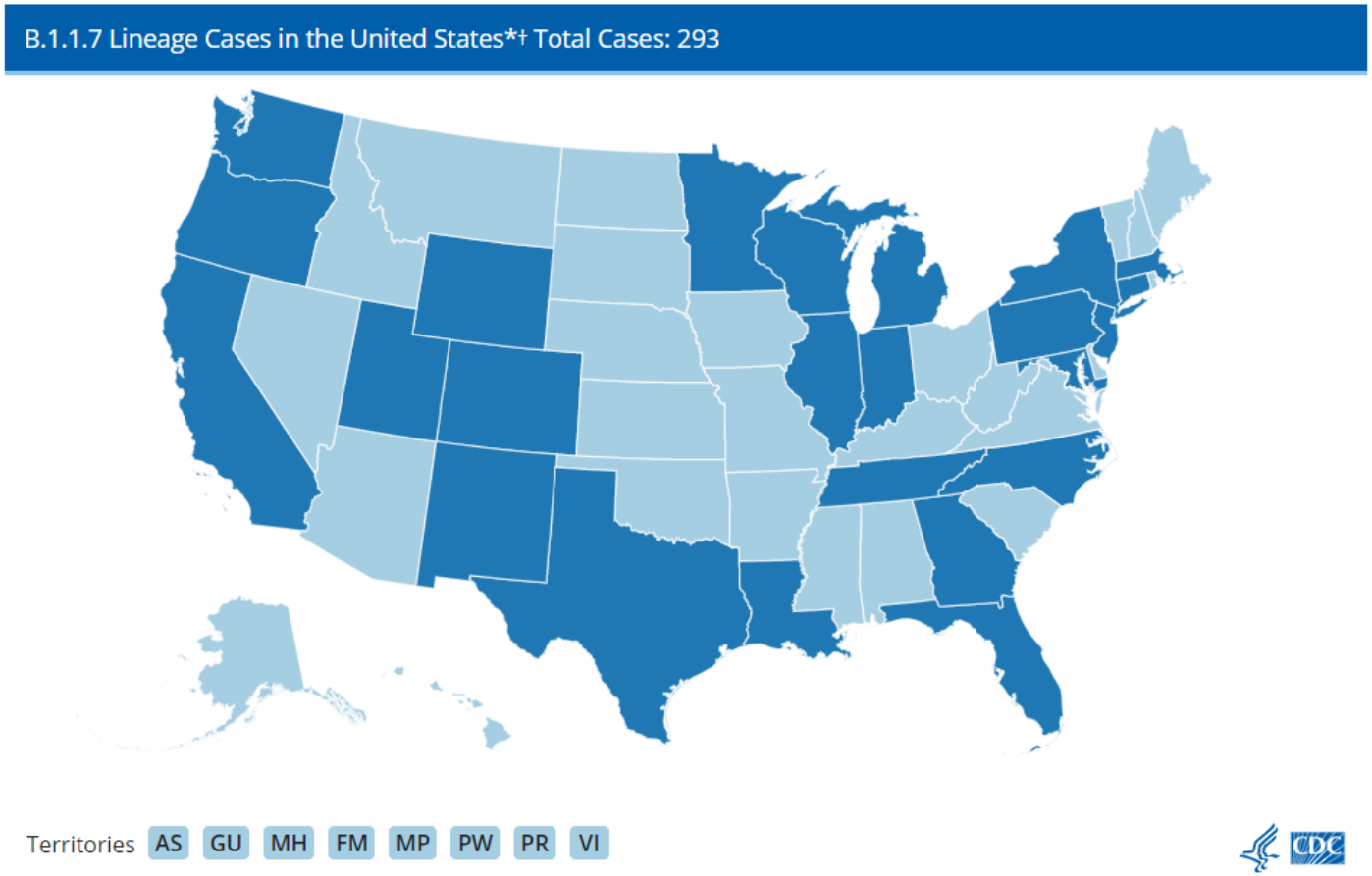
COVID-19 Variants

B 1.1.7 and P.1 in the United States



Source: https://www.ecdc.europa.eu/en/publications-data/covid-19-infographic-mutations-current-variants-concern

Identified US COVID-19 Cases Caused by B.1.1.7 Variant



State	Cases Count
FL	92
CA	90
NY	22
MI	19*
CO, IL	9
TX	7
GA	6
MN, PA	5
CT, IN, MD	4
MA, WI	3
NJ, NM, TN, WY	2
LA, NC, OR, UT, WA	1

* Two additional cases identified in MI after the CDC dashboard was published

Data last updated January 25, 2021 7:00 PM
Source: https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant-cases.html

Michigan COVID-19 Variant and Response

Situation: 19 cases and counting

- 50% more transmissible = increased numbers of cases, hospitalizations, and deaths
- Slow spread of B 1.1.7 to allow for vaccination of vulnerable individuals
- Identified in Michigan
  - 13 individuals in Washtenaw County
  - 6 individuals in Wayne County
  - Expect there are more
- Public Action:
  - Masks (and face shields)
  - Social distancing
  - Hand washing
  - Get tested if you have traveled out of MI in last 14 days

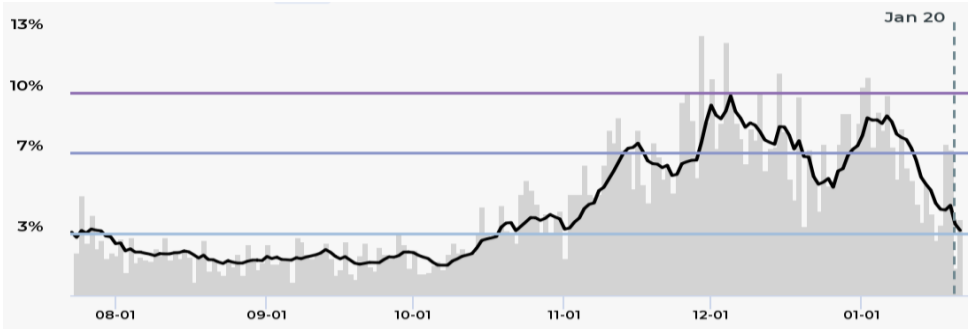
Response

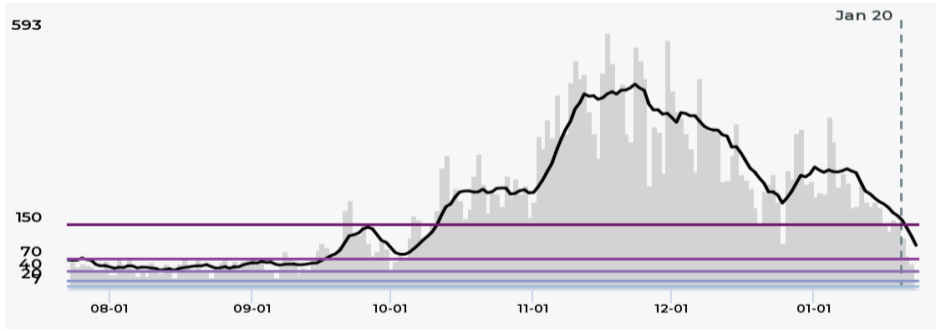
- Increase identification: samples from hospital laboratories
- Rapid case investigation and consider inclusion of extra day before onset
- Impacted areas:
  - Public notification of impacted areas
  - Strictly enforce isolation and full 14-day quarantine
  - Emphasize testing in affected areas
  - Expand testing capacity in areas where the variant has been detected.
  - Actively work to obtain testing for exposed individuals, particularly those that are known to have been exposed to the variant strain

Recent trends: Positivity

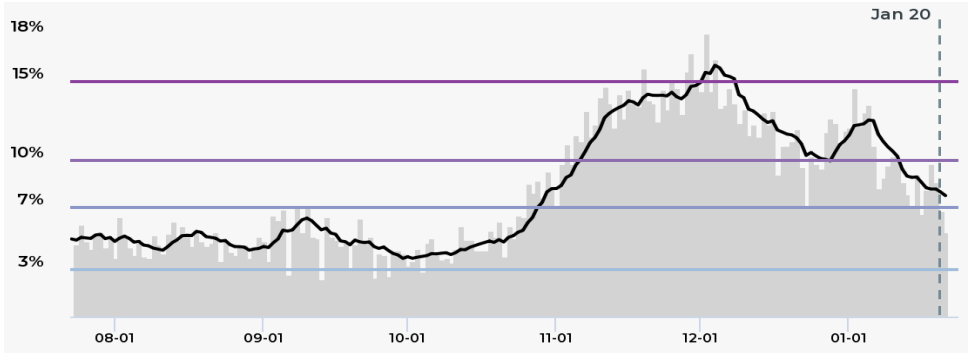
Recent trends: Case Rates

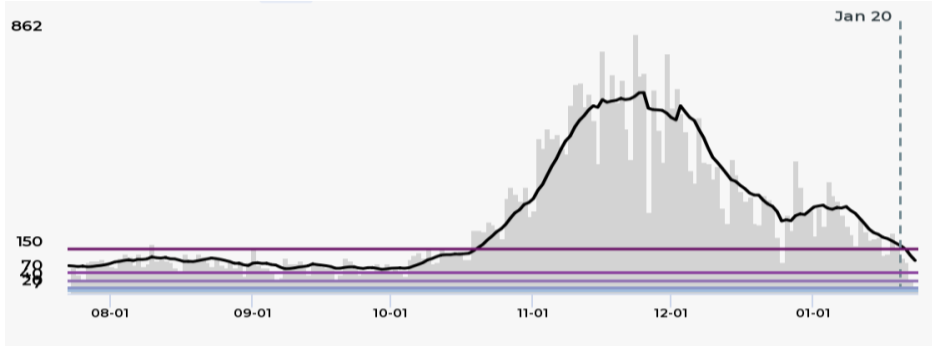
Washtenaw County



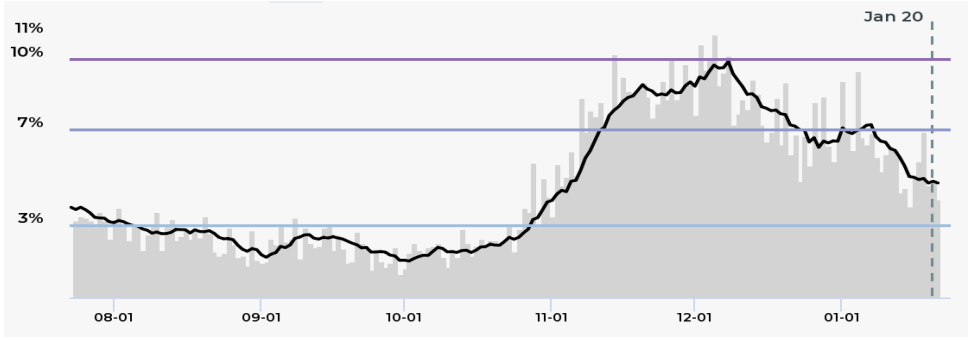


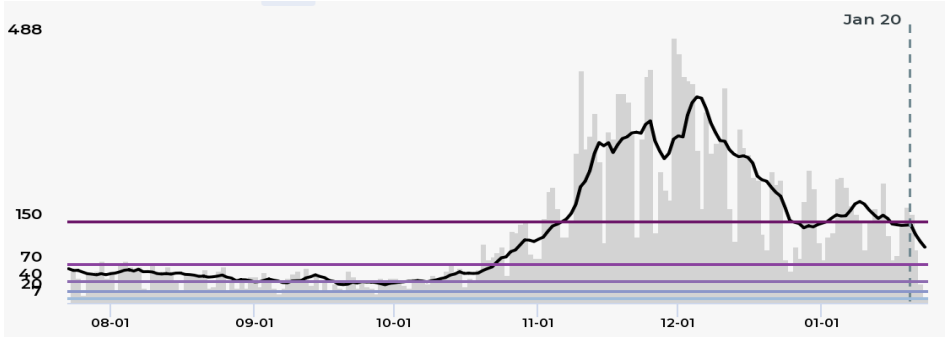
Wayne County





Detroit City

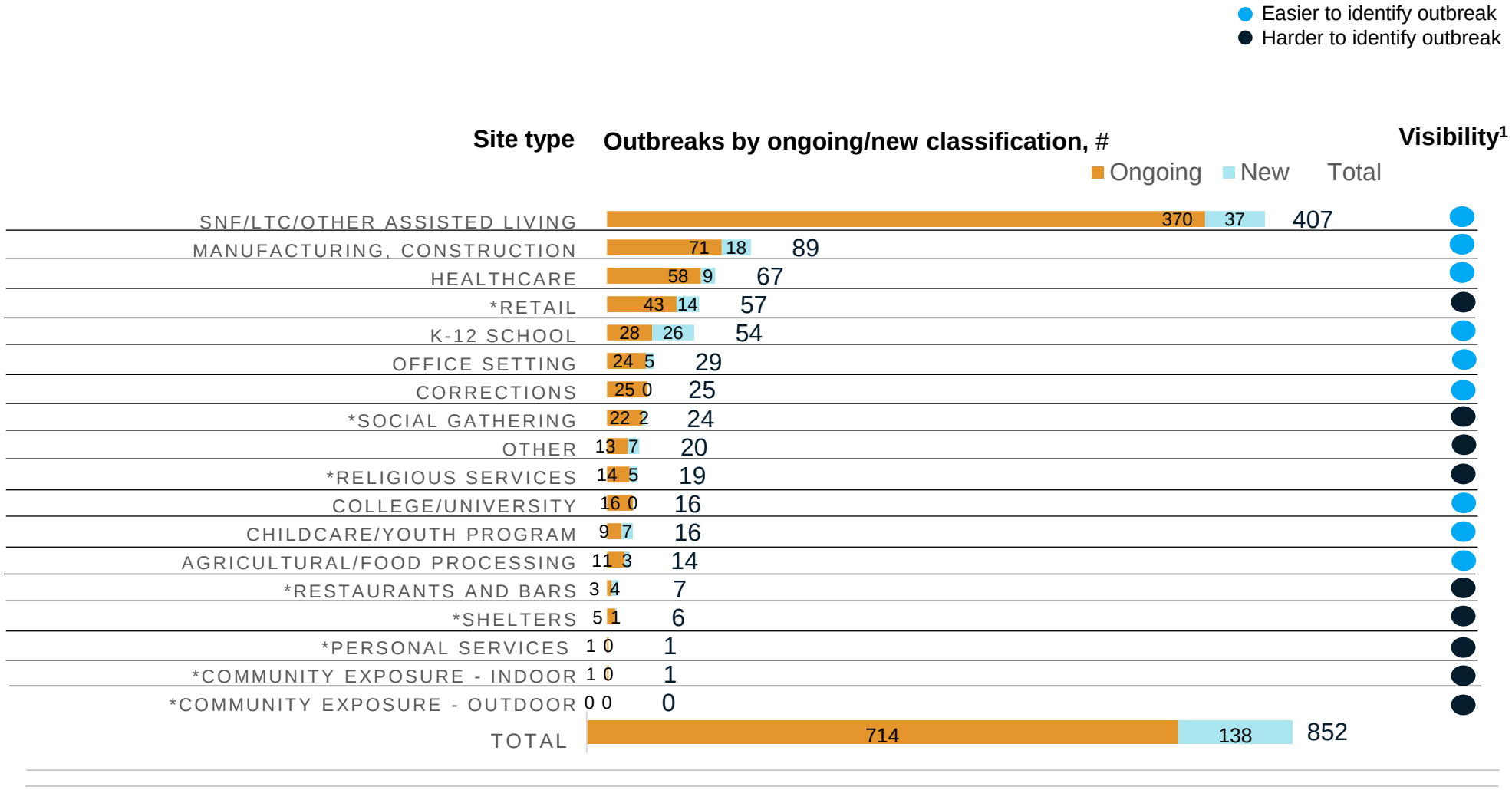




All charts represent data from 07/24/20 – 01/21/21

Source: MI Start Map; MDOC excluded

Number of outbreak investigations by site type, week ending Jan 21



Total number of active outbreaks is down 6% from previous week

Following LTCs, the greatest number of new outbreaks were reported in K-12 schools (26), manufacturing/construction (18), retail (14), and healthcare (9).

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

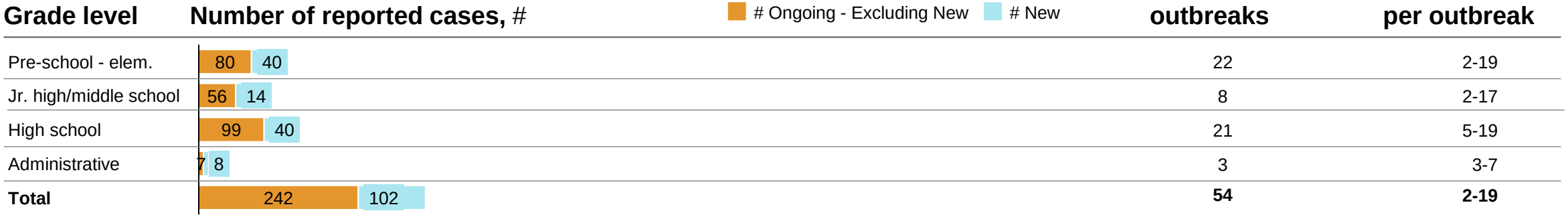
1. Based on a setting's level of control and the extent of time patrons/residents spend in the particular setting, different settings have differing levels of ability to ascertain whether a case derived from that setting

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 21

Number of reported outbreaks increased since last week (40 to 54) including increases in High Schools (12 to 21), Middle/Jr High (7 to 8), Pre K-Elementary (19 to 22), and Administrative (2 to 3).

Region	Number of reported cases, #		Number of outbreaks	Range of cases per outbreak
Region 1	40	8	8	3-13
Region 2n	10	0	2	3-7
Region 2s	10	14	5	2-9
Region 3	104	29	15	3-19
Region 5	10	9	3	3-19
Region 6	66	17	12	2-12
Region 7	2	17	6	3-4
Region 8	0	8	3	2-3
Total	242	102	**54**	**2-19**



Grade level	Number of reported cases, #		Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	80	40	22	2-19
Jr. high/middle school	56	14	8	2-17
High school	99	40	21	5-19
Administrative	7	8	3	3-7
Total	242	102	**54**	**2-19**

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

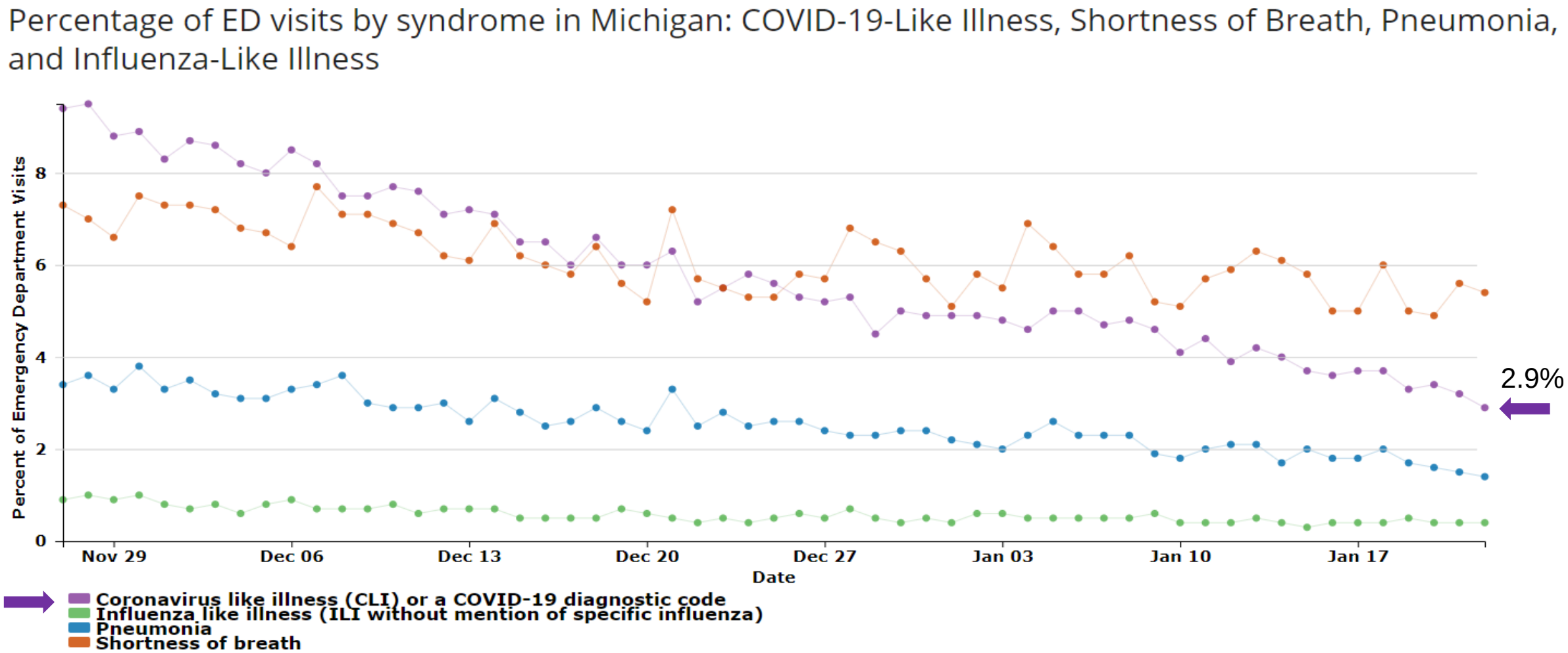
Hospitalizations and ICU utilization are decreasing

- COVID-like illness (CLI) continues with downward trend and is now below 3%
- Hospitalizations down 62% since December 1st peak
- ICU occupancy declined 14% over last week
- All regions below 20% of Adult ICU beds with patients positive for COVID
  - Half of regions below 15%

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

- 55% decrease from the peak on December 10
- Decreases in deaths seen among most ages, races, and ethnicities

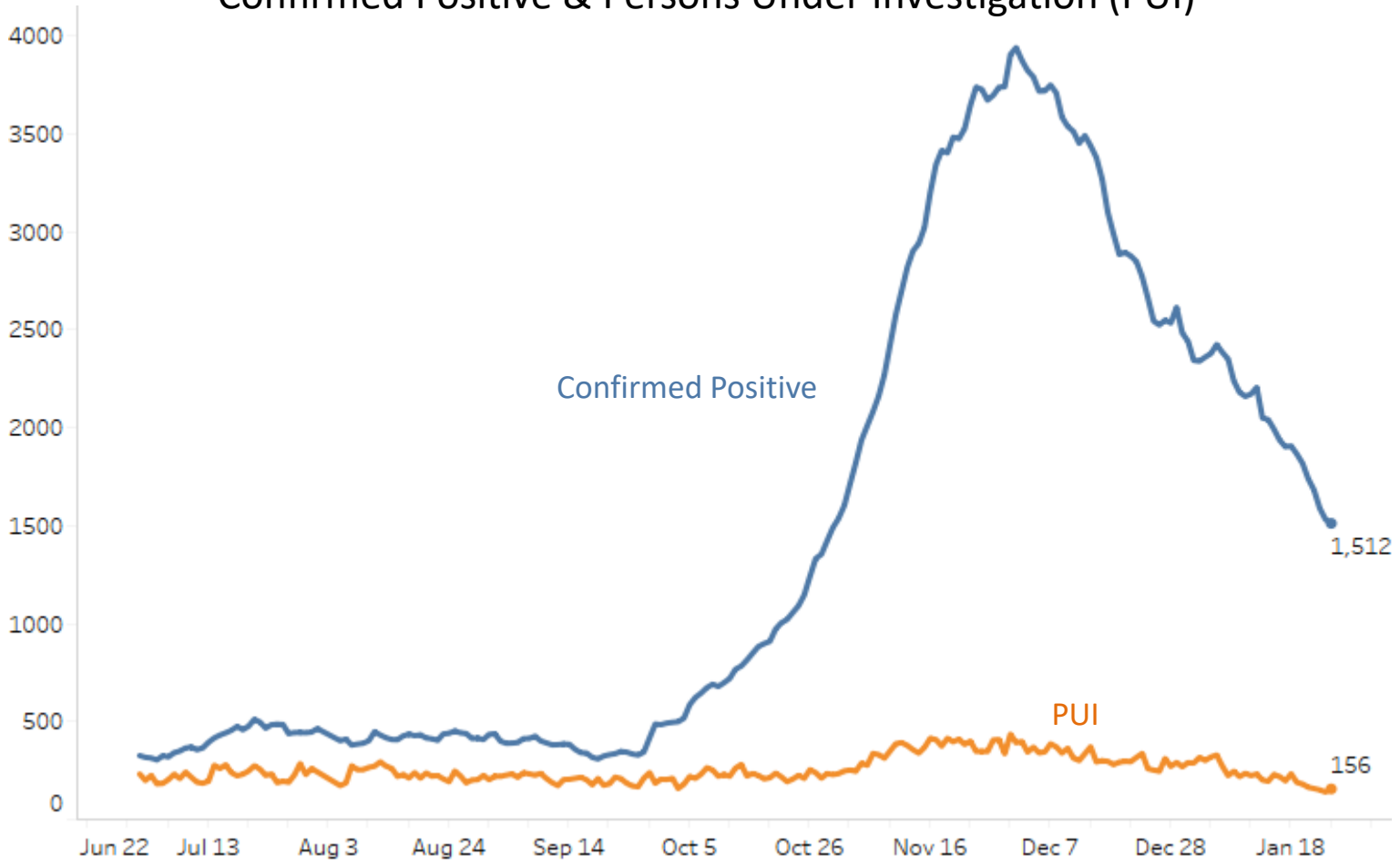
Michigan Trends in Emergency Department Visits for COVID-19-Like Illness (CLI)



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

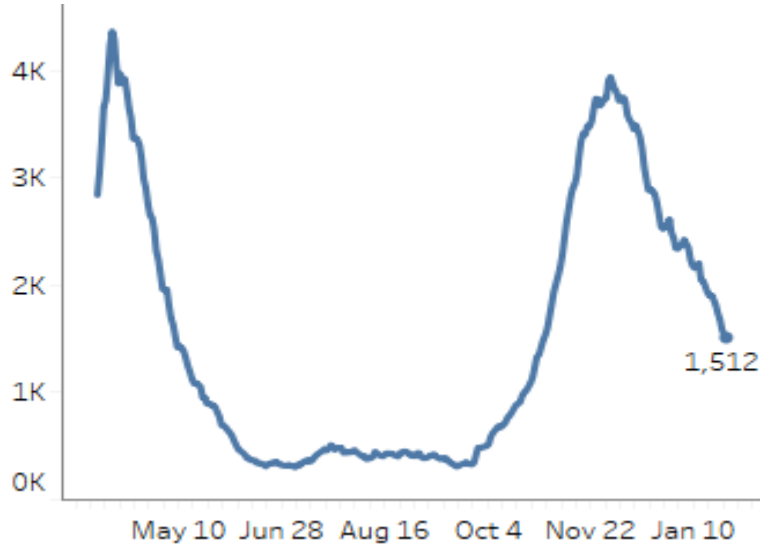
Statewide Hospitalization Trends: Total COVID+ Census

Hospitalization Trends 7/1/2020 – 1/25/2021
Confirmed Positive & Persons Under Investigation (PUI)



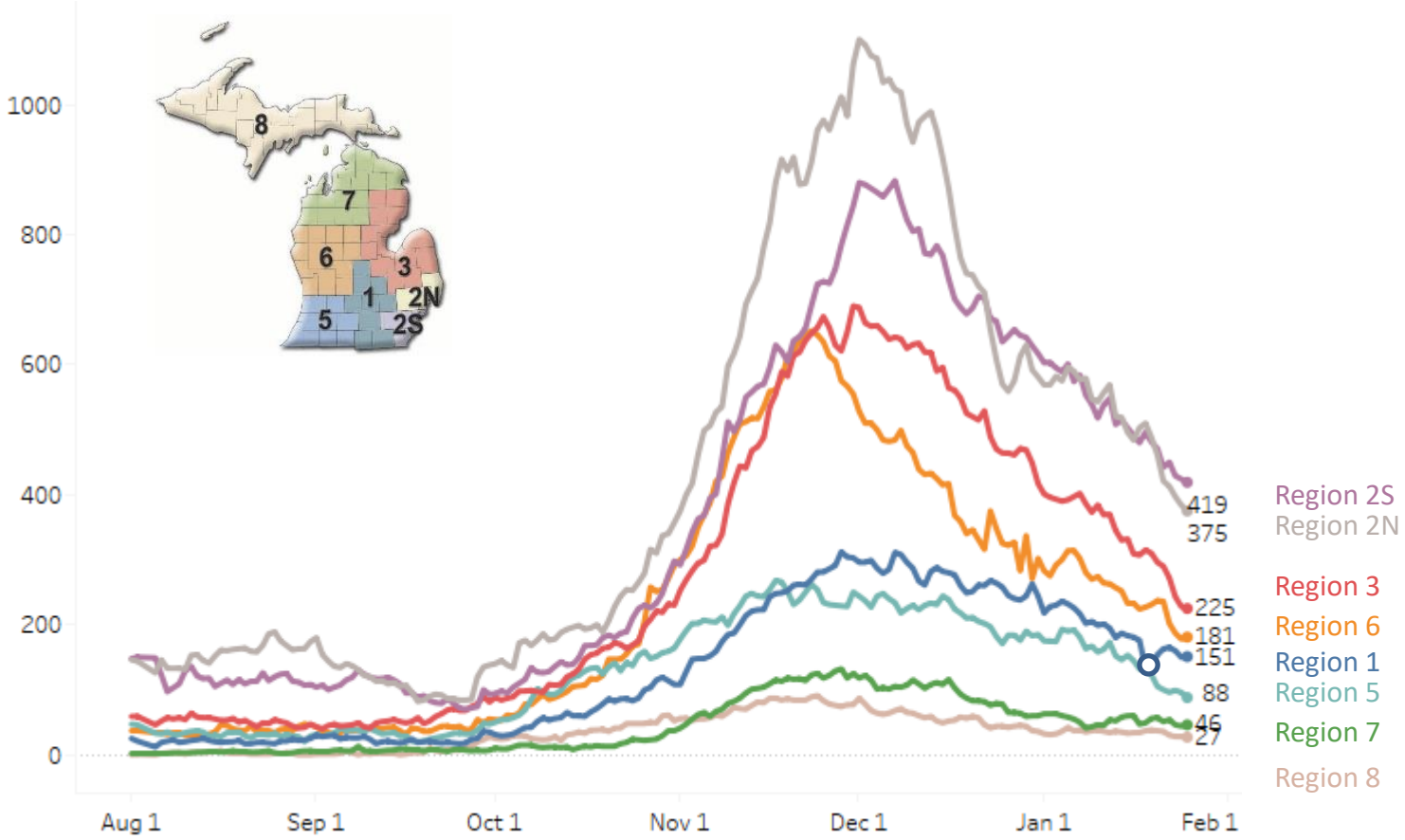
This week, COVID+ census in hospitals is down 21% from the previous week and down 62% from the December 1 peak.

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 8/1/2020 – 1/25/2021
Confirmed Positive by Region



*Note Region 1 current increase is relative to a large dip 7 days ago, overall trend is slowly decreasing

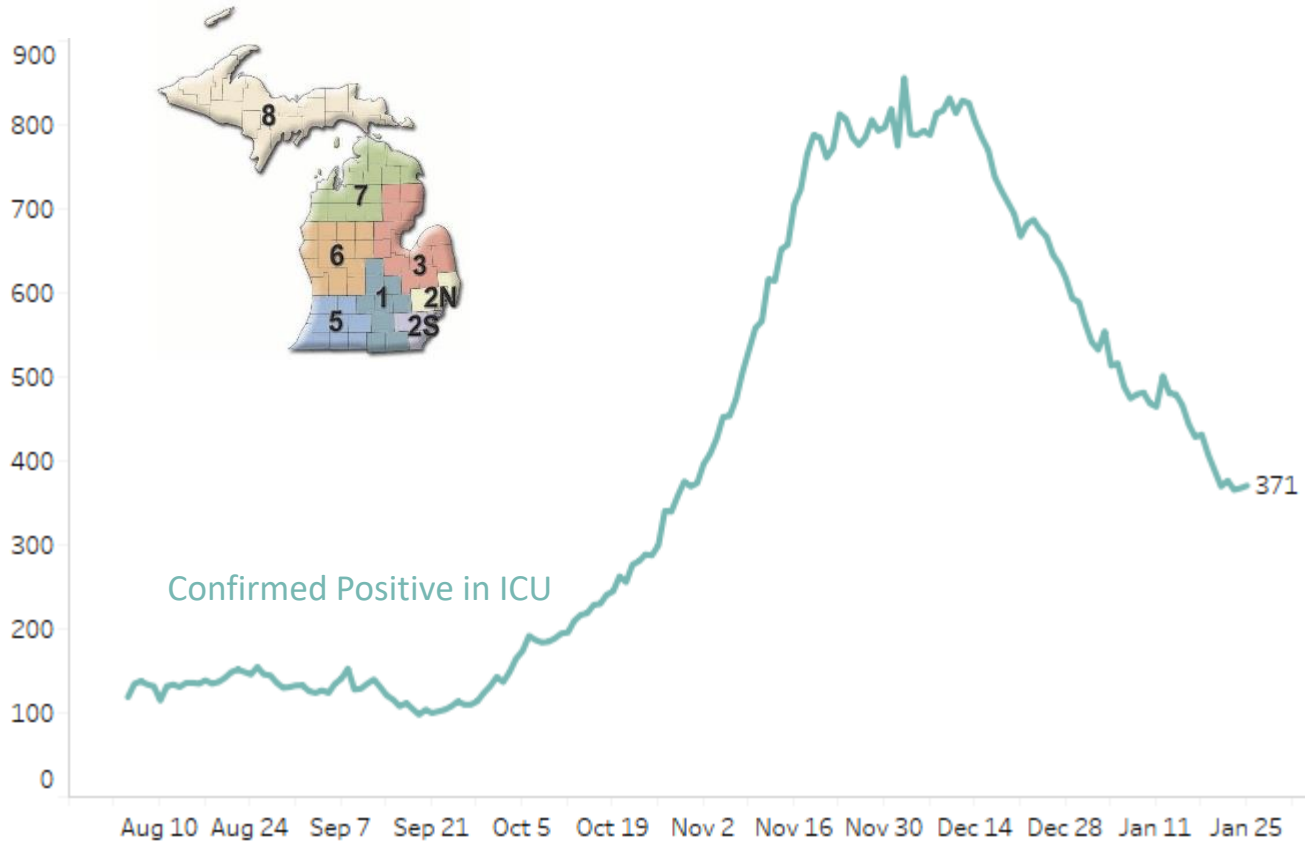
All regions are showing decreasing or flat overall trends in COVID+ hospital census. Region 1 had a small increase this week after many weeks of strong decreases.

All regions are below 200 hospitalized per million people.

Region	Trend from Last Week	COVID+ Hospitalizations / MM
Region 1	13%*	140/M
Region 2N	-27%	169/M
Region 2S	-16%	188/M
Region 3	-29%	198/M
Region 5	-37%	92/M
Region 6	-20%	123/M
Region 7	-6%	92/M
Region 8	-27%	87/M

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 8/1/2020 – 1/25/2021
Confirmed Positive in ICUs



The census of COVID+ patients in ICUs have declined over the past week, with all regions showing declining or near flat trends. Overall, census is down 14% from the previous week.

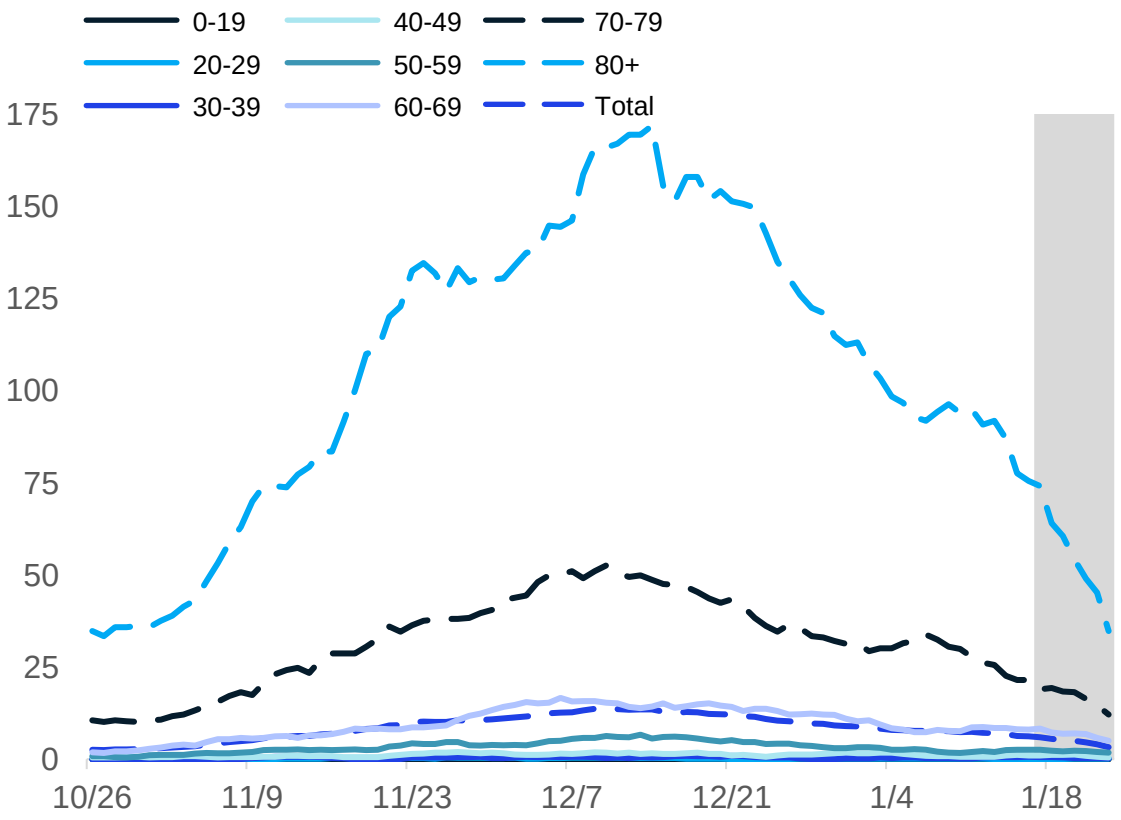
No regions have >20% of ICU beds occupied by COVID+ patients.

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	35 (6%)	85%	18%
Region 2N	80 (-13%)	76%	15%
Region 2S	100 (-15%)	80%	13%
Region 3	56 (-22%)	90%	15%
Region 5	13 (-19%)	72%	9%
Region 6	47 (-22%)	65%	13%
Region 7	32 (3%)	69%	18%
Region 8	8 (-27%)	71%	14%

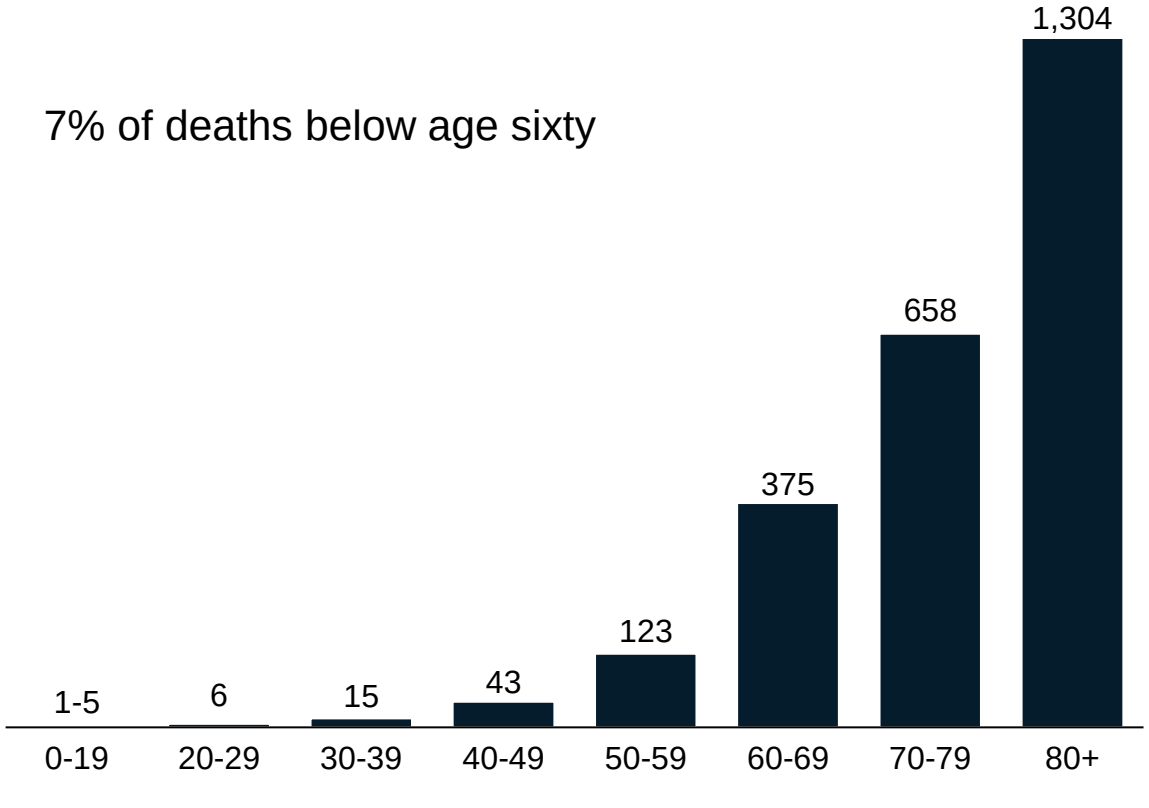
Hospital bed capacity updated as of 1/22

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 1/16/2021)

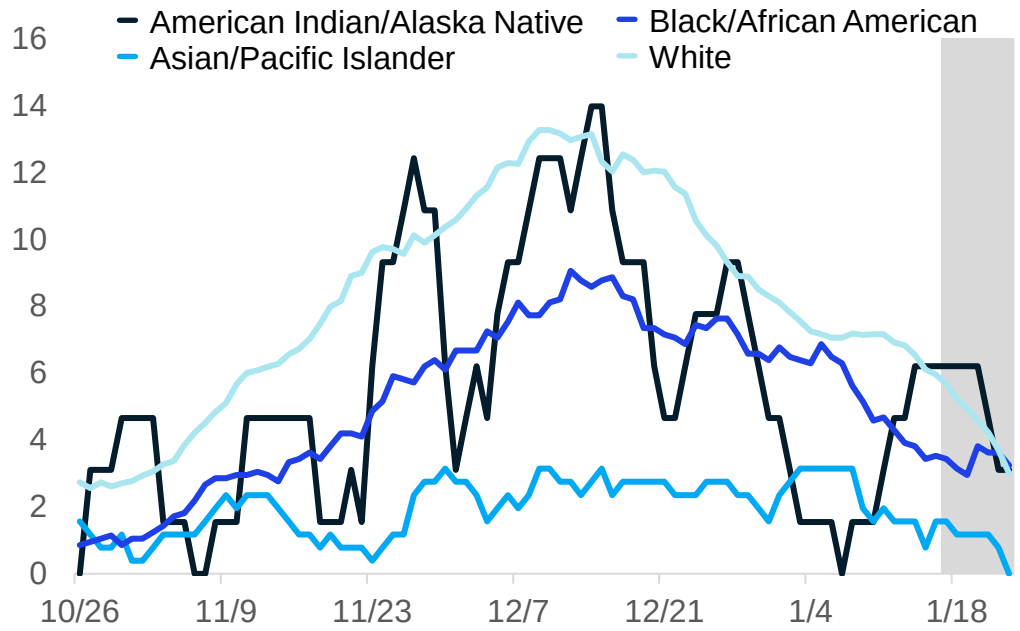


Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.

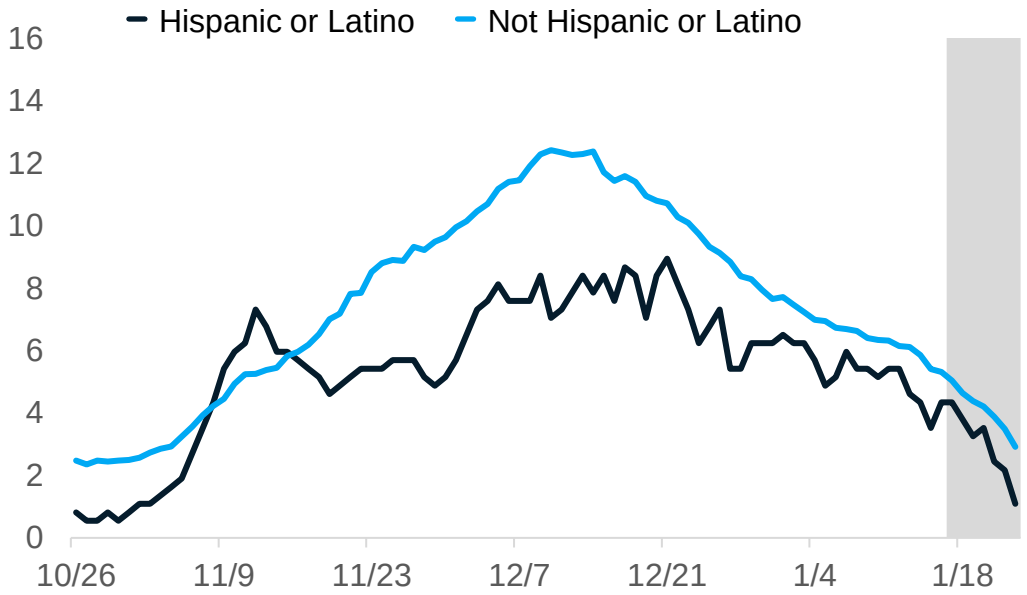
Source: MDHHS – Michigan Disease Surveillance System

7-day rolling average daily new deaths per million people by race and ethnicity

Average daily new deaths per million people by race



Average daily new deaths per million people by ethnicity



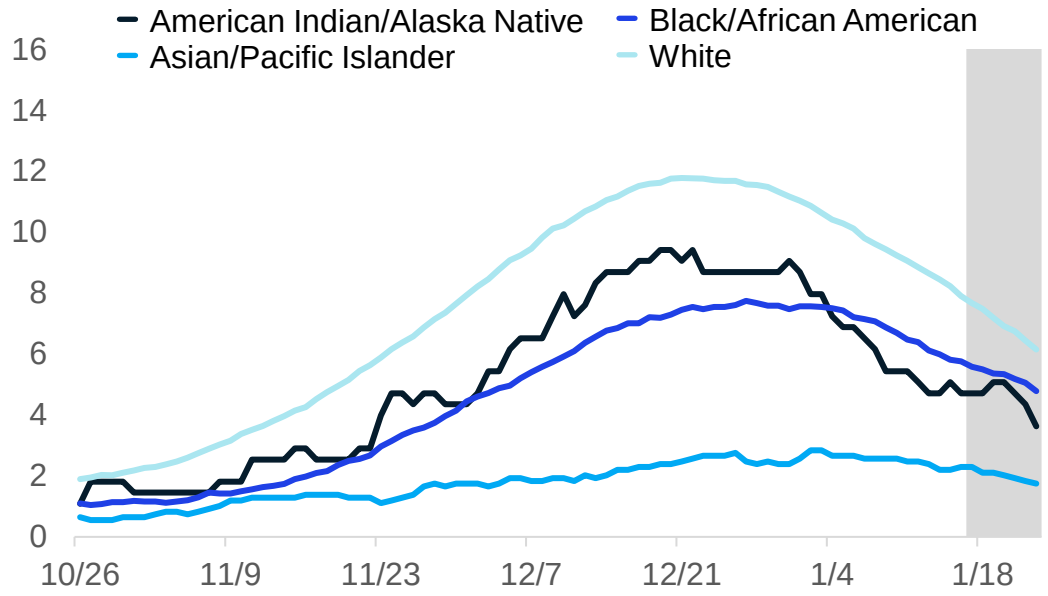
Updates since last week:

- 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
- The large fluctuation seen among American Indian/Alaskan Native is due to small population size
- Deaths are not adjusted for confounders (e.g., age, sex, comorbidities)

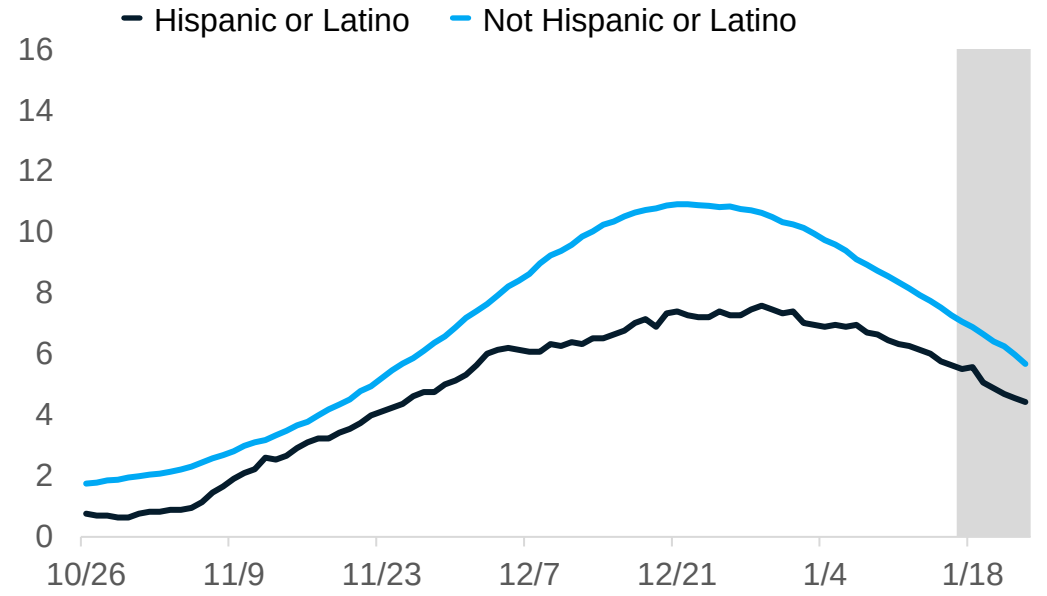
Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.
Source: MDHHS – Michigan Disease Surveillance System

30-day rolling average daily new deaths per million people by race and ethnicity

Average daily new deaths per million people by race



Average daily new 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
- Less variability is seen when reporting over longer periods
- 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?

Testing volume has decreased from last week to 45,424 (↓4,042)

- 13.7% are antigen tests
- Testing by county ranges from 1,100 to 12,000 daily tests per million residents

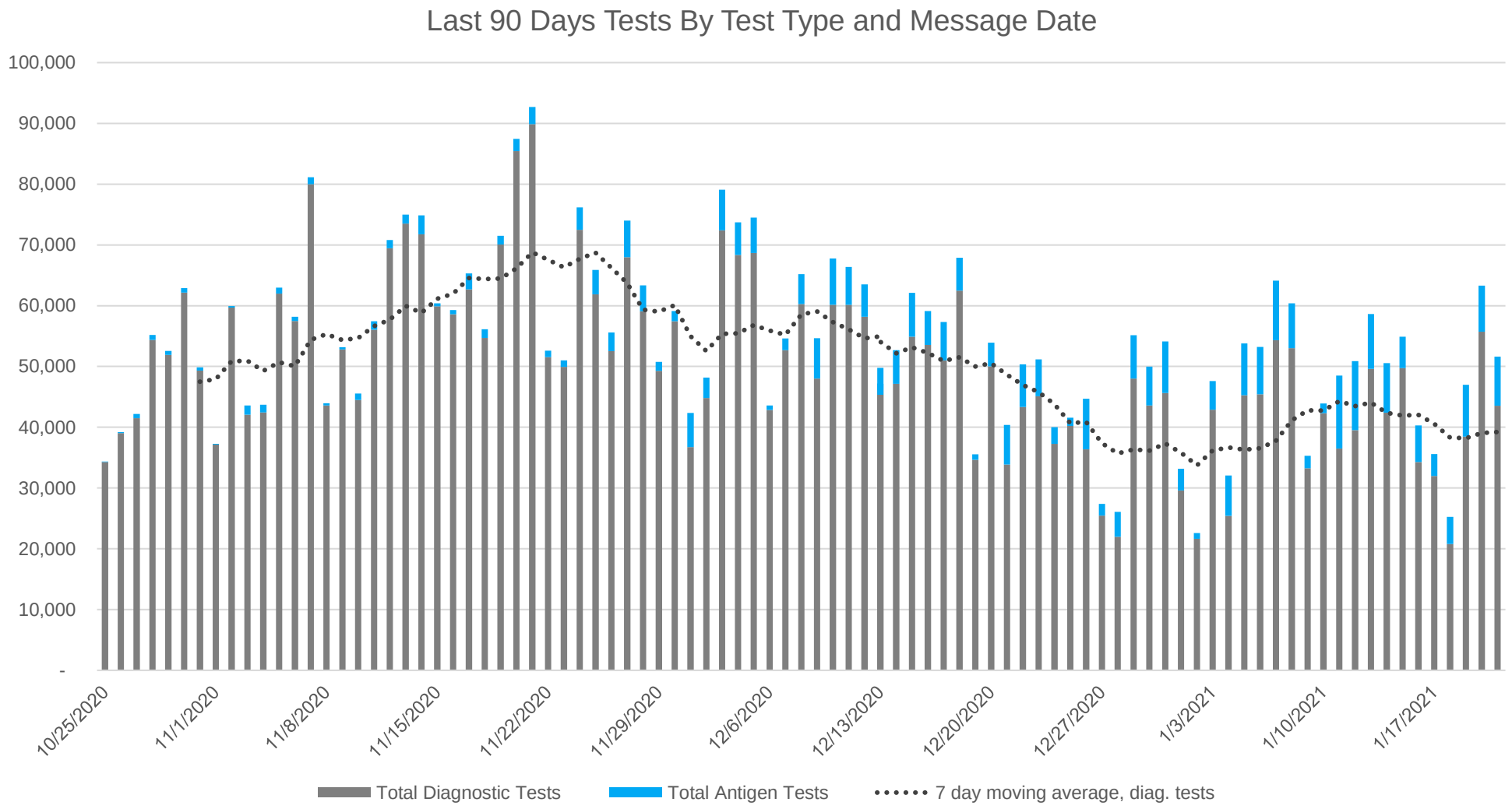
Case investigations progress has plateaued

- Consistent number of cases interviewed, however, proportion completed has increased
- 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)

Test turnaround time has improved

- More than half a million tests reported in the previous 2 weeks, a majority from commercial labs
- Average turnaround time is now below 2 days

Daily diagnostic tests, by message date



Weekly Update

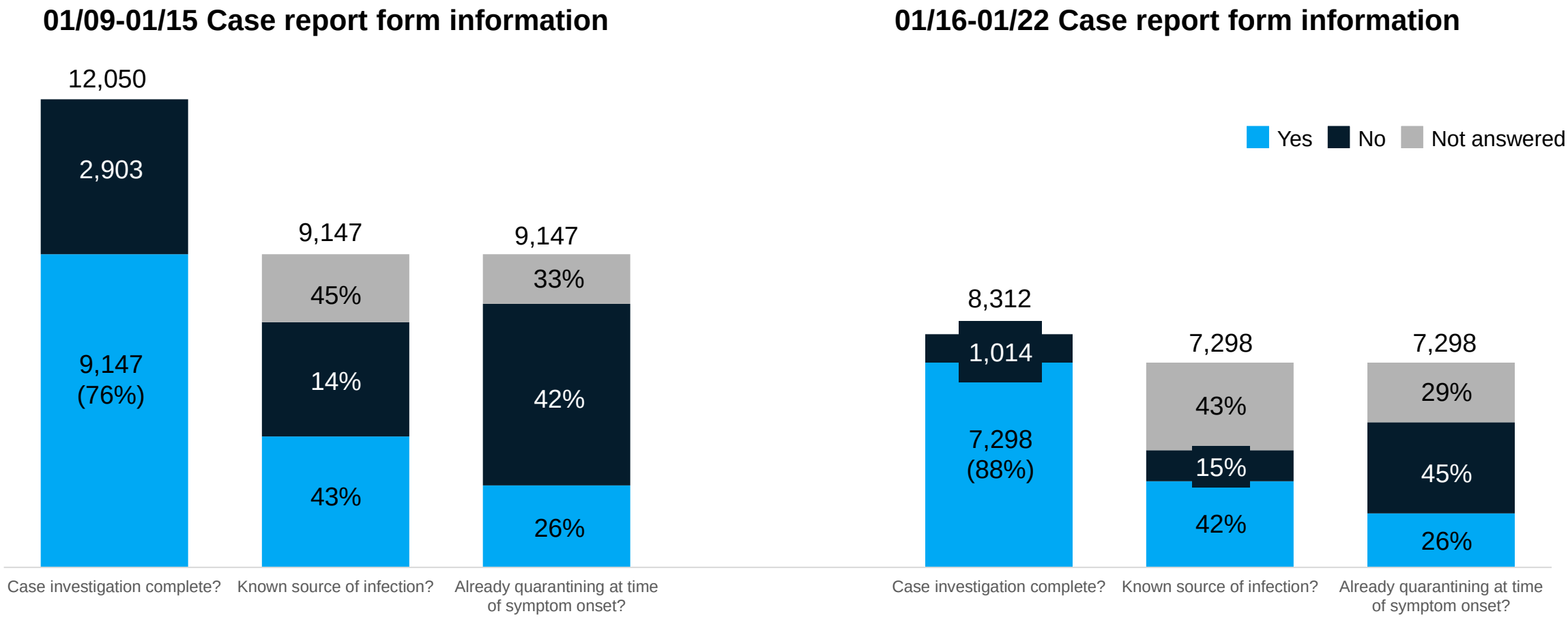
- 45,424 (↓4,042) rolling 7-day average daily diagnostic tests reported to MDHHS (PCR + Ag)
- 39,792 average daily PCR tests (18,208 short of 58,000 goal)
- 17.9% of counties meeting testing capacity threshold (goal 100%)
- 13.7% are antigen tests over the past week (↓1.2%)
- 4.2% positivity in antigen tests (↑0.7%)

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

New Case Investigation Metrics

New Communicable Disease metrics slightly increased since last week:

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



Source: MDHHS – Michigan Disease Surveillance System

Testing Turn Around Time: Collection to report

Summary

- Last two weeks over 579,426 tests, 65% from commercial laboratories
- Less than a day transport time (from test collection to receipt by the laboratory)
- Average turnaround time 1.97 days

Estimated Turnaround Times for COVID-19 Diagnostic Testing Results Received at MDHHS During Last 14 Calendar Days (through 1/20/2021)

Lab Type	Test Count	Transport Time (Days)	Total Turn Around Time (Days)
Commercial	378,948	0.54	2.40
Hospital	187,069	0.27	1.06
Public Health	5,784	0.26	4.29
State Total	579,426*	0.43	1.97

Lab Type	Test Count	Transport Time (Days)	Total Turn Around Time (Days)
Region 1	56,306*	0.38	1.60
Region 2N	104,161*	0.37	2.14
Region 2S	130,252*	0.36	1.96
Region 3	53,708*	0.38	2.08
Region 5	51,371*	0.30	1.79
Region 6	82,556*	0.42	1.70
Region 7	18,918*	0.34	2.53
Region 8	21,144*	0.70	2.50

* Includes SNFs

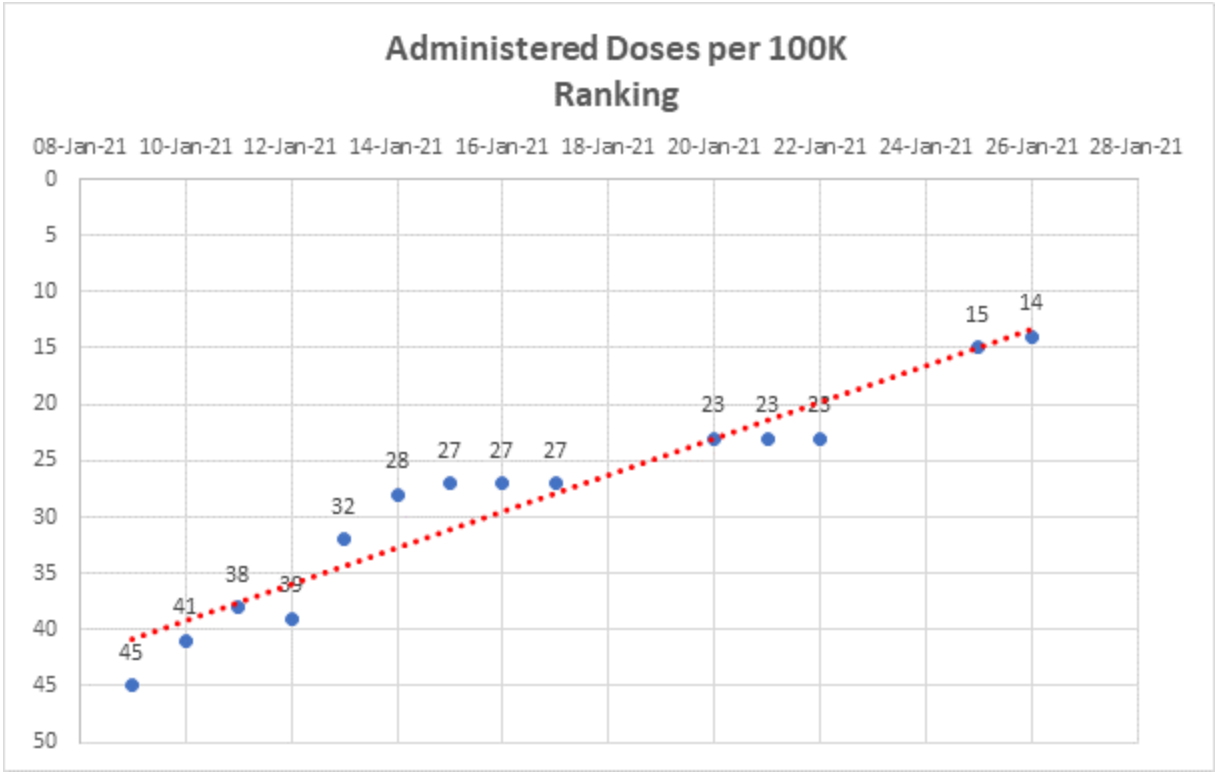
Source: Michigan Government website- Coronavirus data
Accessed on 12/14/2020

COVID-19 Vaccination

- MI 14th in nation for doses administered per 100,000 people
- 7.8% of Michiganders have first dose of vaccine (up from 5.4 last week)
- 760,066 doses reported to MDHHS, including 629,399 first doses and 130,667 second doses
- More than 130,000 people fully vaccinated
- 16% of people over age 75 have received one dose

Michigan COVID Vaccine Distribution & Administration As of 01/26/2021

	State Rank
Total Distributed (Number)	9
Distributed per 100K	21
Total Administered (Number)	6
Administered per 100K	14
People with One+ Doses (Number)	8
People with One+ Doses per 100k	20
People with Two Doses (Number)	7
People with Two Doses per 100k	19



CDC Ranking Data for the 50 States as of January 26, 2021 at 12:16 pm [COVID Vaccination Rank Data as of 20210126.xlsx]

Doses Shipped and Administered

Data as of :	1/24/21	1/26/21	1/25/21			1/25/21
	Enrolled Providers	**Doses Shipped**	**Total Doses Administered**	**1st dose**	**2nd dose**	**1st dose Coverage, 16+**
Michigan Distributed	**1,873**	**1,047,275**	**760,066**	**629,399**	**130,667**	**7.8%**
Federal LTC Program		430,200				
Total with LTC Distribution		1,477,475				

Vaccine Coverage by Age Group

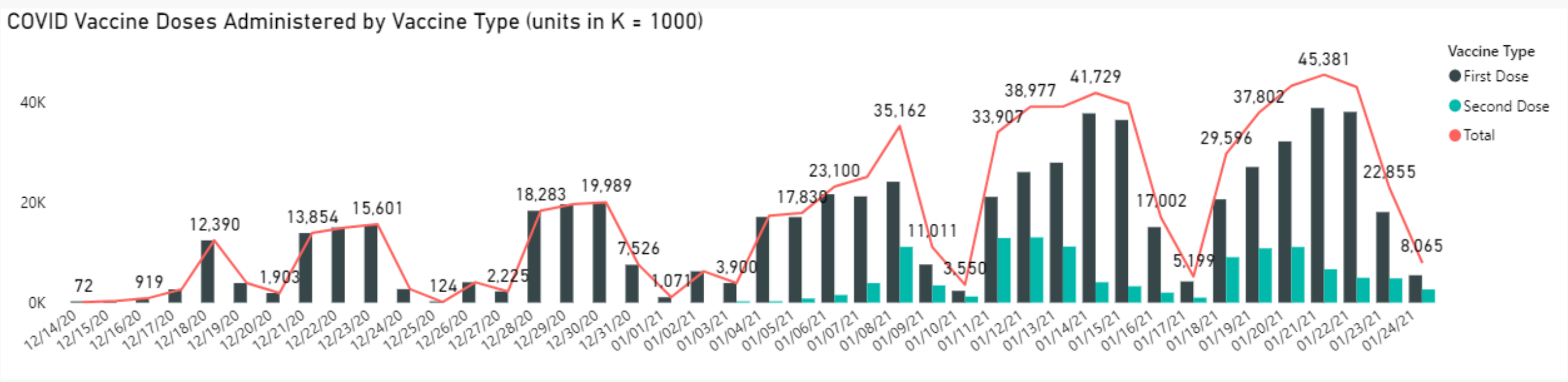
Initiation Covid vaccination rates are highest among those 65 years and older

- 16% of people 75 years or older
- 13% of people age 65-74 years

Complete coverage is highest among age groups in the 30-49 year old range

Age Category	People with One or More Doses	People with Two Doses	% of Pop with One or more Doses	% of Pop with Two Doses
16-19 years	3,264	466	0.6%	0.1%
20-29 years	60,108	20,231	4.4%	1.5%
30-39 years	85,393	31,816	7.0%	2.6%
40-49 years	88,746	27,904	7.5%	2.4%
50-64 years	143,107	41,009	7.0%	2.0%
65-74 years	130,246	7,646	12.6%	0.7%
75+ years	118,535	1,595	16.3%	0.2%

Doses Administered Per Day (1/25/21)



More than 32,000 doses/day administered over last seven days

Federal Long-Term Care Facility (LTCF) Pharmacy Partnership Program
Data as of 1/24/21

Pharmacy and Phase	Activation Date	Facilities	Facilities with 1st Clinic Complete	%	Total Vaccines Administered (Residents & Staff)	Clinics Scheduled Over Next 7 Days
CVS Part A (Skilled Nursing Facilities)	12/28/20	269	269	100%	24,822	0
CVS Part B (Other LTC Facilities)	1/4/21	717	654	91%	22,604	63
Walgreens Part A (Skilled Nursing)	12/28/20	145	145	100%	13,716	17
Walgreens Part B (LTC Facilities)	1/4/21	2,309	685	30%	20,194	626
Totals		3,440	1,753	51%	81,336	706

Science Round Up

A comparison of Midwest state government pandemic responses and the burden of COVID-19

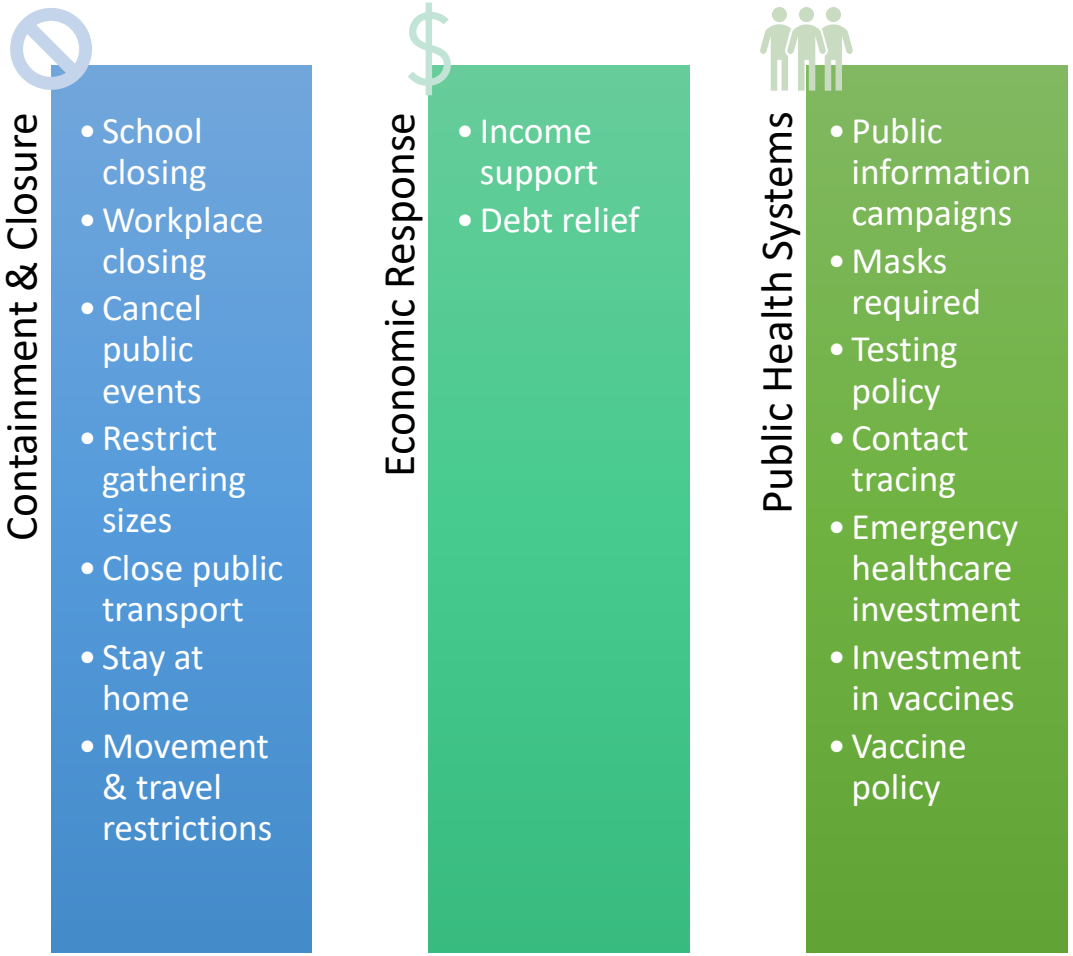
- Higher average government response over the holiday season (Nov 1 – Jan 15) also had lower total case rates

Impact of social distancing over the holiday season protected Michiganders

- Model estimates that increased social distancing following the Pause to Save Lives prevented ~109,000 cases

Oxford Coronavirus Government Response Tracker (OxCGRT)

- Government Response Index: tracks overall government response based on measures of containment & closure, economic response, and public health response
- Three additional indices based on subsets of the GRI: Containment & Health, Stringency, and Economic Support
- Each index is a total score based on the features included
- Does not capture differences in enforcement or effectiveness of a given policy

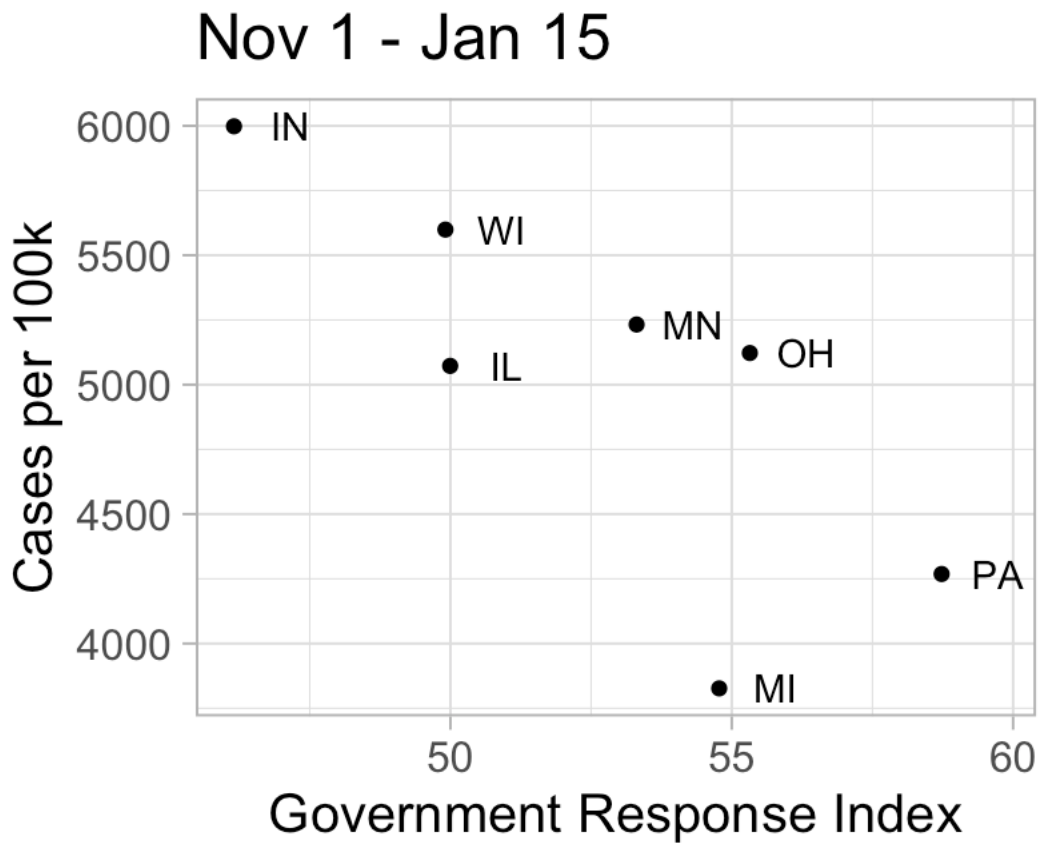


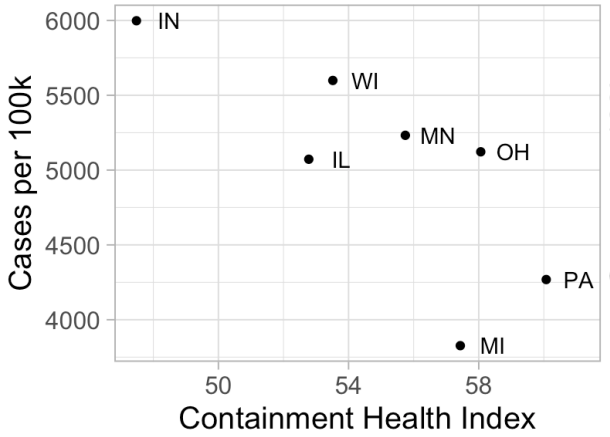
Source: OxCGRT indices

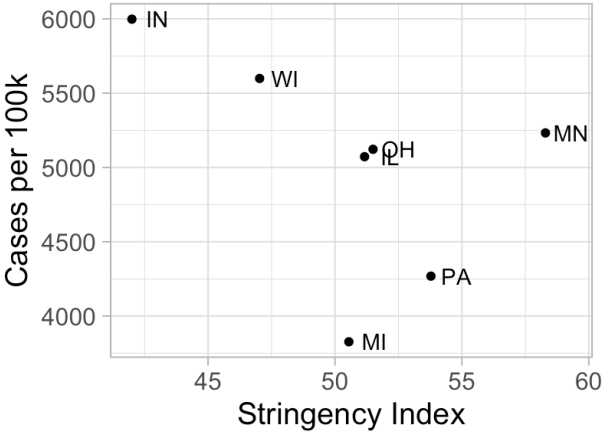
Government response index vs. cases in the Midwest

- **Midwestern states with higher average government response index over the holiday season (Nov 1 – Jan 15) also had fewer cases per 100,000 population**
- Similar patterns for containment health index and stringency index (although weaker for stringency index)
- Note the average does not reflect dynamic changes during this time range
- Government response index (GRI) – an overall index for government response, accounting for closures, economic supports, and public health efforts
  - Stringency – subset of GRI focused on closures
  - Containment and Health – subset of GRI focused on closures and health efforts (but not economic supports)

Source: OxCGRT indices, JHU case data

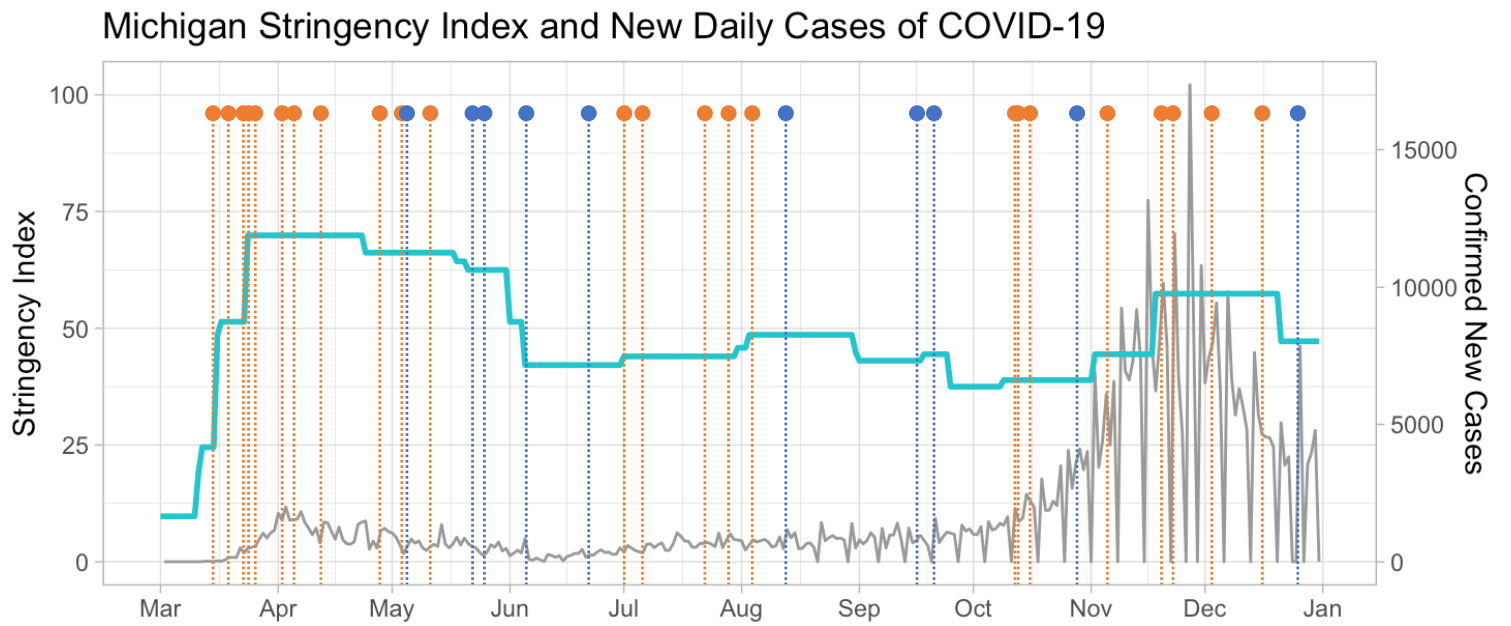


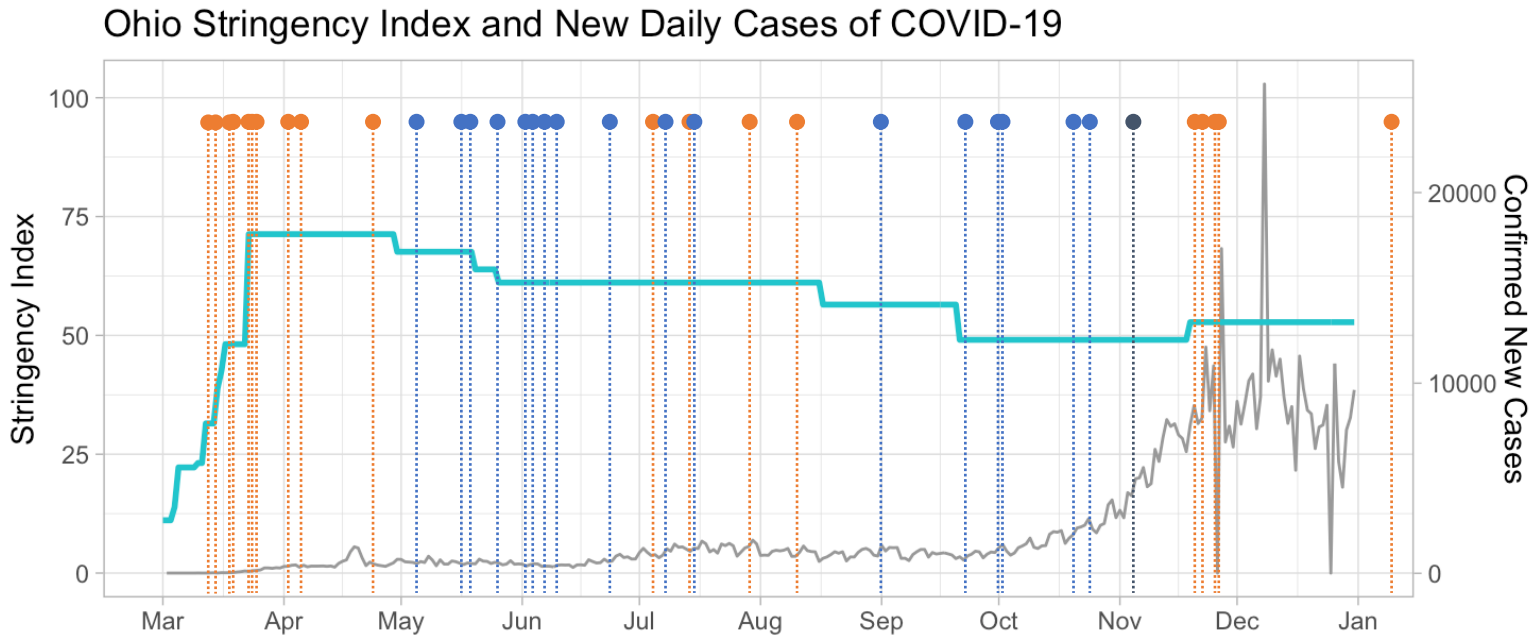




Michigan and Ohio Containment & Closure Efforts

- Stringency index in MI has been more adaptive to changes in case counts whereas OH has had fewer changes and tended toward reopening
- Stringency index does not capture differences in enforcement or effectiveness of a given policy





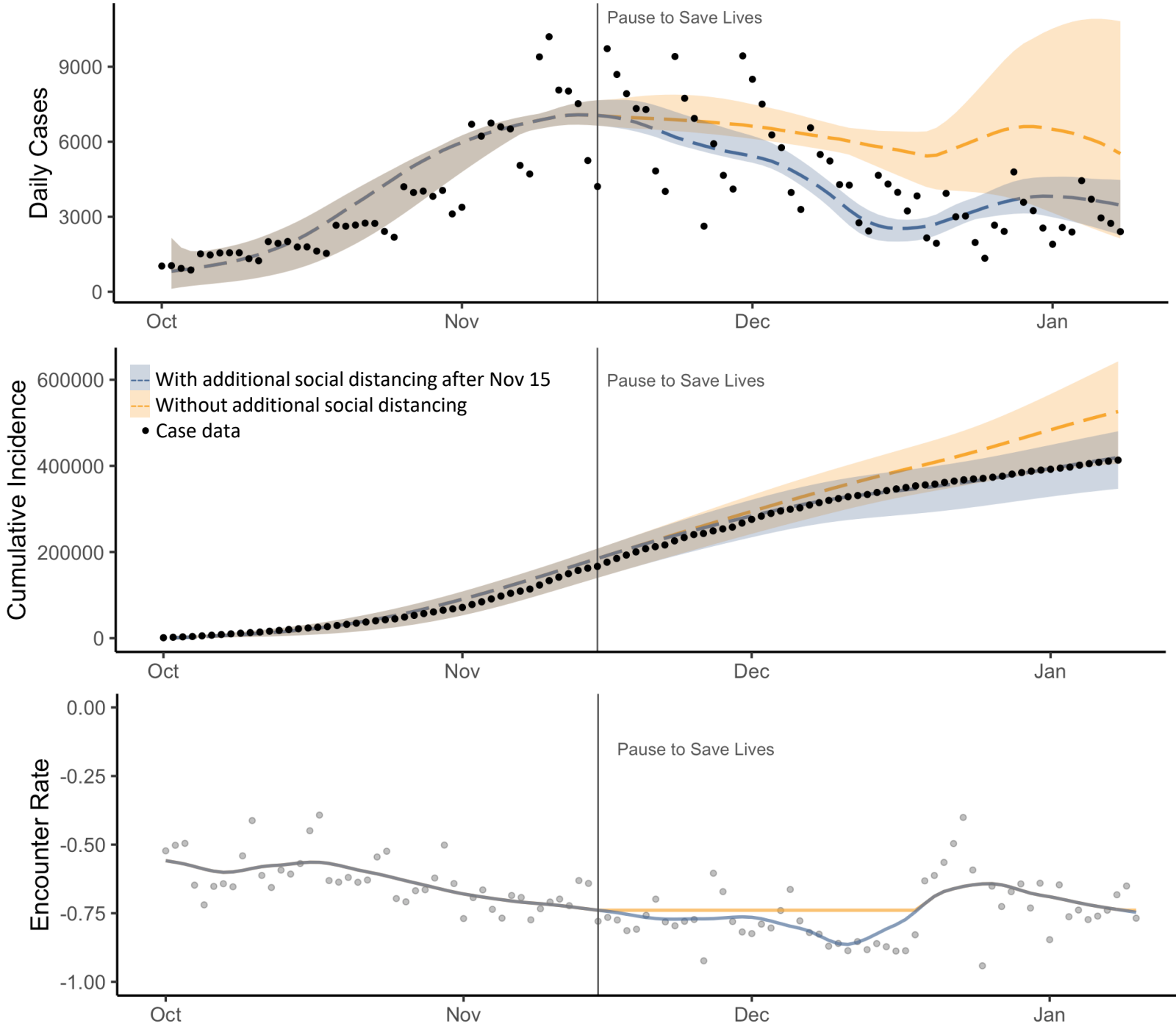
PUBLIC HEALTH

Sources: Source: OxCGRT indices, JHU case data, JHU policy tracker

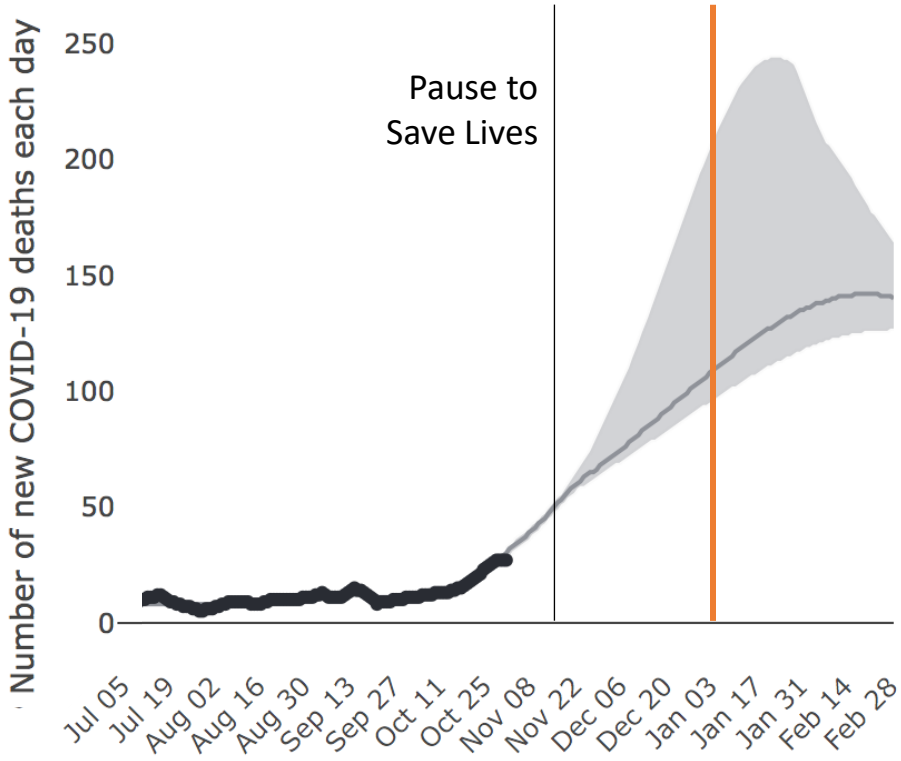
Impact of social distancing over the holiday season

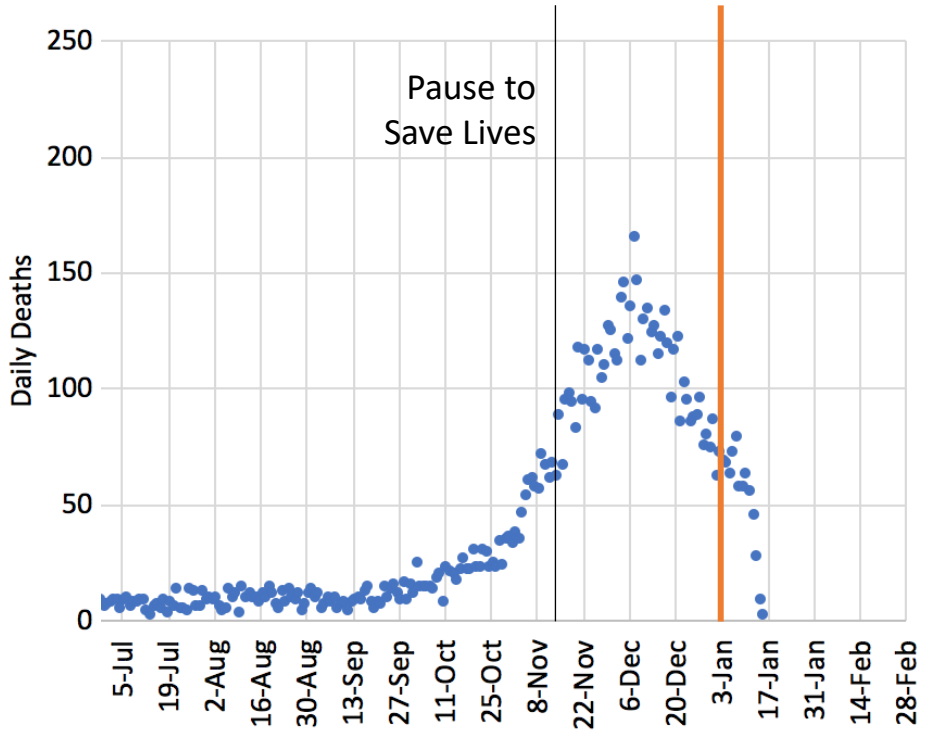
- Evaluate the impact of increased social distancing following November 15 (Pause to Save Lives)
- **Model estimates that increased social distancing following the Pause prevented ~109,000 cases**
- Blue: Model fit to daily case data
- Orange: Simulation assuming no additional social distancing (no decrease in encounter rate) starting November 15 (Pause to Save Lives)
- Uncertainty level: best 10% of parameter estimates out of 1000 estimates

Sources: UM COVID-19 Modeling, MDSS case data, Unacast encounter rate data



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

PUBLIC HEALTH

Source: MDSS data, COVID-SIM Model